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Still an Active Market

Sustained Demand for Finished Material

Larger Outputs of Mills and Blast Furnaces—Price Advances Established

The buying of finished steel has continued on a scale that has broken the tradition of a quiet market at the end of the year and has tended to establish the higher prices recently asked, particularly for bars, plates and structural steel. Buyers are not rushing in to cover for the future in the way that has been known to bring rapid advances, and cautions against too fast a pace are gratuitous. On the other hand, the attitude of sellers is decidedly changed, and that of itself has produced business.

Mill resumptions on December 26 were general, and operations have increased this week at a number of plants, instead of waiting until after New Year's day. The Steel Corporation is putting two Ohio furnaces at Youngstown in blast and one at New Castle, Pa., and all furnaces of those groups are now active. January 1 will be no holiday at the corporation's plants.

Heavy orders have come to the steel manufacturers this week and leading interests are now so far committed for the first four months of 1912 that the question has arisen whether the railroads will find open space for such rollings as some of the trunk lines have required heretofore for spring delivery.

One of the two large rail orders now pending is expected to be placed within the week. The Chicago & Northwestern has bought 60,000 tons in the Chicago district and the Soo Line 18,000 tons. A number of smaller orders have gone to the Ensley mill. Stone & Webster have placed 6000 tons with the Pennsylvania Steel Company. The B. & O. order is 40,000 tons.

There are confident predictions by high authorities that large car buying will be seen early in the new year. The Rock Island has ordered 2500 cars and the Steel Corporation will buy 3000, of which 2000 are for the Pittsburgh, Bessemer & Lake Erie and 1000 for the Elgin, Joliet & Eastern.

The advance in steel bars to 1.15c., Pittsburgh, has been well held. There is more resistance to a higher basis for structural shapes; but 1.15c. appears to be the minimum, while 1.20c. has been secured in some cases. The persistent weakness in fabricated work is still a factor, as steel companies are called upon to back up the low bids of customers.

Plate mills in the Central Western and Chicago districts have nearly four months' work ahead, but eastern Pennsylvania mills, which share in only a small way in steel car business, are not so well off. Considerable sales have been made on the 1.20c., Pittsburgh, basis.

Sheet and tin plate mills will operate in January on better schedules than in months, and the average to-day is about 75 per cent. of capacity. The newly formed

association of manufacturers in these lines need hardly be rated a market factor. Any attempt at price maintenance is disclaimed, and thus far the larger producers have held aloof.

Wire mills are also increasing their operations, good orders having been taken on the $1.55 basis for wire nails. Wire prices are still low in comparison with those for the heavy products.

Pittsburgh district steel works are heavily committed on billet and sheet bar contracts for the first half of 1912, and $20 for Bessemer and open-hearth billets is now generally quoted, representing $1 advance. Forging billets are now $26, Pittsburgh, an advance of $2 in two weeks.

Sustained activity in pig iron in the Central West, particularly at Buffalo and Cleveland, contrasts with quiet markets in the East and at Chicago. In central Ohio 10,000 tons of basic was taken by one melter and an inquiry for 20,000 tons is up. The buying of foundry and malleable grades from furnaces on Lake Erie has also been good. Furnaces having orders for several months ahead have advanced their prices, but sellers for the first half of next year at the recent level have not all disappeared.

December pig iron production of the steel companies has been greater than in November. Merchant output has also increased, and a number of furnaces in both classes will blow in in January.

Ferrosilicon is tending upward; foreign offerings of 50 per cent. grades in this country are less, and domestic users are more dependent upon American sources of supply.

A holiday shortage of labor in the Connellsville coke regions has advanced the price of spot coke to $1.75, but normal operations are expected to make this price short-lived.

Trade Statistics

The demand for trade statistics is insatiable. They are desired on every phase of a commercial subject. If a promoter seeks to establish a manufacturing enterprise in a section where a good reason must be advanced for his choice of location, he endeavors to learn from some reputed authority the annual consumption within a reasonable radius of the product contemplated. If a manufacturer finds his regular customers taking too little of his product, so that it is necessary for him to go afield in search of markets, he tries to ascertain the extent of the requirements of an accessible section so that he can determine whether a campaign in that direction would be worth the effort. Every large manufacturing consumer is anxious to know all he can with regard to the production of his raw materials and the extent of the stocks carried by the producers, so that he can determine whether to buy cautiously or to make contracts for long deliveries. On such subjects as population, exports and imports, crops produced, railroad operations and other matters coming under the attention of departments of national, State or municipal government a wealth of statistics is available, every year seeing such inquiries more extended, while the bulk and variety of the tabulations cause the apparent impression on the minds of the public that in some way or somehow statistics on trade subjects are similarly gathered.

Apart from the figures collected by the Census Bureau, all trade statistics are purely the result of private effort in getting them together. Certain commercial statistics may be compiled for a locality by a board of trade or a chamber of commerce. Figures of production in a particular branch of manufacturing industry are collected by some association of the manufacturers interested or by a trade journal. The private agencies doing this class of work are numerous, but they do not by any means cover the entire field of productive or commercial activity. In some branches of trade, even quite important ones, no individual nor association has undertaken the work and annual statistics are therefore not available. In the iron and steel industry, admirable as has been the statistical work done by the American Iron and Steel Association, the variety of products is so great that it has been found impracticable to endeavor to get the figures for every one. Hence, even in that line, it is quite possible for one hunting for information on a certain branch of the iron trade to be disappointed because the figures regarding it are not to be had. Aside from the figures collected by the Census Bureau, all trade statistics are voluntarily furnished by the manufacturers or merchants in the several branches of industry or commerce. There is no obligation on their part to give such figures to any private agency, and when they do so it is because they are able to rise above selfish considerations for the benefit of the trade at large and in recognition of the universal desire for information showing the progress of the nation. In any branch of trade the unwillingness of a few important members to intrust secrets of their business to the gatherer of statistics would completely block the work. It is therefore greatly to the credit of American business men that the statistics of American production in so many important branches of trade are much more detailed and comprehensive than those available in foreign countries.

Those who have had experience in the collection of statistics, and are therefore most able to appreciate the difficulties encountered in securing the confidence of manufacturers whose figures are desired, have little patience with criticisms of the information that may be published. One of the latest important branches of trade to adopt a policy of publicity is the copper industry. This industry has most courageously gone further than any other, in not merely giving monthly the statistics of marketable copper produced, but also publishing the stocks of marketable copper in producers' hands at the close of each month. For many months the publication of these statistics showed stocks of copper increasing, with the natural result that consumers bought sparingly, forcing the producers to carry stocks for them, and steadily depressing the price of copper. Although they keenly appreciated the peculiar position in which they had placed themselves, in thus apparently giving buyers of copper a great advantage over them, the producers did not falter, but continued to publish their figures showing still larger stocks. At last the situation has changed, stocks of copper are decreasing, the price of copper is advancing and producers are getting some benefit from their policy of publicity. The statistics being thus in favor of the producer, an important consumer whose views are given monthly in a trade circular now assails the character of the figures published because they relate only to the refined production and do not give the quantity of copper actually mined. The circular issued for this month says: "It is not for the sake of being

overcritical that we draw attention to the fact that the mining output and the refinery production of marketable copper are two different propositions, but in order that the mind may not be allowed to become confused over the statistics by which the trade is asked to judge of the situation." As marketable copper is the only form of copper which appeals to a consumer, the statistics regarding such copper are of the highest value to him. The "mind" would be likely to be more confused if both mine output and refinery output were to be stated. The interests of this and other consumers of copper have been benefited by the information voluntarily given by the copper producers. Do the consumers of copper, who are also manufacturers of finished forms of copper, treat their customers in similarly liberal fashion by publishing their figures of output and stocks? If they do not, they are hardly in a position to criticise the copper producers, who have so quickly placed themselves in the forefront of publishers of commercially valuable trade information.

It may be merely a dream, but we hope that some day in the not distant future we may find the manufacturers of pig iron following the lead of the copper producers and giving monthly for publication their figures of pig iron carried in stock. It would be far better to have the figures accurately stated than to have wild estimates in circulation such as those current at times in the past year. When no figures are given by authority, guesses will be made and they will always be so extravagant as to upset the buyer and the market.

Direct Metal Stimulates Construction

The discovery that a very material economy in the manufacture of steel could be effected by the use of molten metal direct from the blast furnace has furnished a distinct stimulus to new construction by way of blast furnace interests adding steel mills and vice versa.

When the direct metal process was first applied it was assumed to be adapted only to large plants, in which the product of several blast furnaces would be mixed, the expense of installing and maintaining one or more mixers being considered so high as to preclude the use of the process in relatively small plants. It did not require a long time, however, to develop the fact that the mixer process was adapted even to the smaller plants and it was rapidly adopted by all companies operating blast furnaces and steel works in contiguity. This spread was undoubtedly aided by improvements in blast furnace practice, whereby the iron came to run more uniform. The use of direct metal is not an invention, for it was the original, and has remained the sole method in Bessemer practice in Sweden, where, on account of the purity of the ores, the pig iron is very uniform. The spread of the direct metal process, then, which began in the early nineties, has been due to improvements both in blast furnace practice and in the construction and operation of mixers.

When the process had been adopted at practically all plants where the contiguity of blast furnaces and steel works made it feasible, its progress appeared to come to an end through the possible field having become occupied. It develops that this is not the case, but that the economy promised is such as to be an important factor in inducing steel works to build blast furnaces instead of buying cold pig, and blast furnaces to build steel works instead of selling cold pig. The case arises only with respect to the open-hearth steel process, since on the one hand there are no Bessemer steel works, apart from steel foundries, which do not have attendant blast furnaces, while general conditions are such that no one is disposed to contemplate the erection of new Bessemer steel works.

While precise estimates cannot be made, it is generally taken that the use of direct metal in the basic open-hearth furnace effects a saving of from $1 to $1.50 per ton of steel produced, as compared with the use of cold pig iron. According to conditions, the proportions of pig iron and scrap used vary, and with such variations there is of course a variation in the economy per ton of steel accomplished with the use of direct metal.

For concrete illustrations it may be mentioned that both at Detroit and at Cleveland undertakings have recently been entered upon to build basic open-hearth steel plants in connection with existing merchant furnaces, while a steel plant in Cleveland similarly positioned was recently completed. On the other hand, a Pittsburgh district interest has just placed contracts for the building of two blast furnaces in connection with its open-hearth steel plant. In one or two other instances serious consideration has been given to similar projects.

It frequently occurs, of course, that new construction is undertaken for the purpose of linking up processes when the industry at large does not need the increased capacity and when no important economy in manufacturing is promised. In such cases the new erection is frequently undertaken because the interest which has the one link thinks the interests having the other link are making more than their proper share of the total profits; but in this case it is not so, for what is contemplated is not a redistribution of profits, but the introduction of an economy in manufacture which could not be accomplished otherwise than by new erection of blast furnaces near an existing steel works, or of a steel works near existing blast furnaces. Of linking up in existing units, however, there has been an interesting illustration in the past year in the Philadelphia district, a well established steel interest and a well established merchant furnace interest consolidating, the chief new construction involved being that of a bridge across the Schuylkill River. In view of the expense involved in this construction, it would not have been feasible to make a term contract for pig iron on a sliding scale, as is frequently done in the case of arrangements which can be terminated suddenly without inconvenience to either party.

The time appears not far distant when the manufacture of steel from cold metal and the manufacture of steel making pig iron for sale in large quantities in the pig form will be exceptional. This, of course, will remove the special profit made by reason of the economy in direct metal, for if market prices are made entirely by interests which practice this process, no specific portion of the total profit is assignable to the use of this process. This point is obvious. The blast furnaces which use regenerative stoves do not have an assured profit from the fact that the regenerative stove involves much more economical operation than the iron pipe stove, the latter having gone out of date. When the iron pipe stove was in general use there was a distinct profit involved in the use of the regenerative stove.

Idle Hours in Machine Shops

One of the simplest ways of increasing efficiency in the machine shop is eliminating the idle time of operators of machine tools. Efficiency experts recognize this as a self-evident primary principle; yet its systematized application is far from universal. The tendency to be old-fashioned has by no means disappeared. It used to be that a planer or lathe hand would start up the machine on a long task and would do little or nothing, excepting to sharpen a tool or perform some other insignificant task, until it would become necessary again to attend to the work. It was a common occurrence to see men sitting about chatting or dreaming, even reading books or newspapers. The condition has been remedied to a large degree, but large opportunity remains for economy in this direction, as is evident to those whose business takes them into shops. It is in older plants, especially those managed by men whose experience runs back into the older days, that the abuse of time is more prevalent, yet in some of the more modern shops the management would be surprised at the record of unnecessarily idle hours which a week totals.

The evil is not so easy to cure as would appear at first thought. It has much to do with the grouping of machinery and routing of work. With the more powerful machines and high speed steel tools, speeds and feeds are much higher and the longer tasks have been greatly reduced. Yet it frequently happens that a man could do more work than is apportioned him, and there is a certain amount of time which he does not employ with profit to the owner. The additional task must be found for him. A little study of these conditions enables owners to increase the average production per man, in some cases in a large way.

European Iron Trade Active

A Marked Revival in Great Britain, with Advancing Prices

British iron trade journals give highly favorable reviews of recent developments in iron and steel, both in Great Britain and on the Continent. The production of pig iron in Germany, which is an index of the situation there, is now estimated at 15,400,000 metric tons for 1911, or about 750,000 tons more than in 1910. Prices are advancing and bookings are increasing in Germany and Belgium, the indications in the former country, as shown by *The Iron Age's* report found elsewhere, being for a record year in 1912 both in profits and tonnage.

That the movement in Great Britain is becoming more extensive and more animated is indicated by reports of both the pig iron and finished material markets there. Cleveland warrants have been heavily dealt in and speculation has been increasingly active. The closing price on Friday, December 22, was 50s. 3d. and the exchange was closed on the four days following. The advance from the low price of two months ago has been about 4s., or $1.

The Iron and Coal Trades Review says that the closing months of 1911 have brought a marked improvement in iron and steel; that the demand for finished material has been on the increase and more recently pig iron has shown more animation, while prices of iron and steel have had an upward tendency, with definite advances made in some lines, while others are pending. The associated manufacturers of plates and structural material in the Midlands have put up prices 2s. 6d., while those of the Northeast Coast and Scotland have announced an advance of 5s. a ton. There has been heavy buying and the Northeast Coast makers have orders for 500,000 tons on their books, which is said to be a record in the history of that trade. The expansion in demand in these lines is spoken of as "remarkable." The Review says that "a genuine trade revival has commenced," that "works are being reopened" and that "there seems every reason to anticipate that 1912 will be a record year as regards production in Great Britain." Advances in finished material are due in part to advances in primary markets, the same saying that on the Northeast Coast the quotation for hematite (Bessemer) pig iron has advanced from something under 61s. at the end of September to 64s. for prompt and 65s. for January delivery. "This increase in its turn has been prompted by dearer rubio ore and coke, the former having risen in the same period from 19s. 3d. to about 21s. 6d. c.i.f. less. Tees, and furnace coke from 14s. 6d. to 16s. 6d. Add to this the increasing scarcity of labor, as shown by the Board of Trade figures—the percentage of unemployed reported in October being only 2.8, as compared with 3.3 in August last—and the increasing wages bill, and there is no difficulty in understanding the upward tendency of prices."

The Iron and Coal Trades Review says that the proposed combination among English tube makers is now revived. There is also a movement for a combination in the Scotch bar iron trade. Referring to Continental markets, it is pointed out that between the end of June and the middle of December the price of German and Belgian blooms, f.o.b. Antwerp, has advanced from 76s. to 84s.; billets from 78s. to 86s., and sheet bars from 81s. to 90s., or roundly about $2 a ton. In the same time the price of basic steel bars, f.o.b. Antwerp, advanced about $3, or to £5 1s.; wrought iron bars, $2.50, or to £5, and plates, $2, or to £6 per gross ton.

The London Ironmonger of December 16 says that the rail trade is more active. An order for 80,000 tons for South Africa is expected to go to British works; that the North-Eastern Railway has ordered 25,000 tons and the East Indian Railway 13,000 tons. Business in prospect includes 8000 tons for Norway, 25,000 tons for Bahia and 4700 tons of 60-lb. rails for South Africa. The Ironmonger says of the general situation in steel products:

> Look where one will the situation in the world's iron trade seems to be working up for a development of activity such as has not been seen for years. Semi-manufactured products continue exceedingly firm and with Continental sellers out of the market for early deliveries overseas competition is confined to the United States. * * * There has been an enormous rush of buying in the steel trade this week and many works have been almost overwhelmed with the business placed before them, while the bookings have in some instances been on an almost unprecedented scale. One steel works, for instance, within the past week or so has booked between 50,000 and 60,000 tons of shipbuilding material. Naturally the heavy general booking has much strengthened the hands of makers and Scotch prices have been smartly advanced all round, while a further upward movement has been put into effect on the North-East Coast.

Efficiency in Government Shops

WASHINGTON, D. C., December 26, 1911.—Representative Wilson, chairman of the select committee to investigate the subject of scientific management of Government workshops, has returned to his Pennsylvania home for the holiday recess feeling very happy over the action of the House in placing $10,000 at the disposal of his committee to continue the work it began last summer. The appropriation was provided for in a resolution reported to the House by the Committee on Accounts to which it had been referred. Although the Democratic majority in the House desires to make a record for economy (notwithstanding the passage of the Sherwood pension bill) there was no objection to the Wilson resolution and it passed unanimously. Before his return to Pennsylvania, Mr. Wilson notified certain of the workmen at the Washington and Norfolk navy yards and the Rock Island arsenal to report in this city on the morning of January 4 to give their testimony regarding the Taylor and other efficiency systems. Some of the heads of departments at these places also will appear in order that the committee may have the fullest information from every point of view.

Mr. Wilson does not purpose to lose time in collecting

his data. The committee will begin the hearings on the day after Congress reassembles and the work will be pushed to completion as rapidly as possible. In Boston the committee met at 9 o'clock in the morning and continued in session until 5 in the afternoon with a recess at noon for luncheon. Here in Washington the committee will meet promptly at 10, though it is not unlikely that an earlier hour will be substituted if it shall appear that the work is not progressing fast enough to bring it to a close by the middle of January. The witnesses will be given for their expenses a mileage allowance of 5 cents a mile and a per diem of $2. This is a rather modest allowance, but Mr. Wilson thinks it will be sufficient to cover the legitimate expenses of all the witnesses including those from Rock Island. Officials of the War and Navy Departments, particularly those having to do with construction work, will be asked to give their views and any other persons whose experience would make them competent witnesses. Upon the conclusion of its labors here the committee will visit Stamford and Philadelphia. At Stamford the employees of the Yale & Towne Mfg. Company will be heard, and at Philadelphia the employees of the Tabor Mfg. Company and the Link-Belt Company. At these plants the Taylor system has been in operation for several years and it is thought that the first hand information obtained will be valuable in enabling the committee to reach a more intelligent conclusion regarding it. At Philadelphia, also, which is F. W. Taylor's home, Mr. Taylor will appear before the committee. To him its sessions will not be new inasmuch as he attended those of last summer in Boston, but then only as an interested spectator. Returning to Washington the latter part of January the committee will at once begin a careful analysis of all the facts it has gathered with a view to having its report in readiness for the House by March 10.

The chairman of the special investigating committee, Mr. Wilson, is chairman also of the House Committee on Labor, and is now serving his third term in Congress. He was born in Scotland and came with his parents to America when he was eight years old, settling in Tioga County, Pennsylvania. Within a year he was working in the coal mines. He has always taken an active interest in trades unionism and was international secretary and treasurer of the United Mine Workers of America from 1900 until 1908. He is now engaged in farming at Blossburg. He is highly esteemed in the House. J. G.

Why the European Copper Market Advances

The report on the metal market issued by Henry R. Merton & Co., Ltd., of London, under date of December 16, has the following comment on the recent interesting developments in the European copper market:

In view of the excellent statistics published at the close of last week, it may be pointed out that the world's stock of copper since it reached the high water mark at the end of June, 1910, has decreased 70,000 tons, while during these 18 months the consumption in the United States has been smaller than during the same preceding period. The shrinkage in the stocks is therefore entirely due to the heavy consumption of the metal in the European industries, and its continuance as revealed in the latest statistics has begun to create some alarm among consumers. The ease with which manufacturers on this side have been able to purchase copper from some of the large American producers during the whole of this year and the readiness shown by sellers to make concessions in price for important quantities had lulled manufacturers into a sense of security, and encouraged them all along to cover their requirements only from hand to mouth. Now, however, it has become evident that without any undue eagerness on the part of consumers the producers have not only disposed of their current output but also of past accumulations, and they are not any more in a position to accommodate the trade with liberal offers. They have, in fact, during the past week been offering very sparingly, and have been obliged to raise their price for electrolytic copper from day to day. This attitude has naturally had the effect of frightening consumers still more, so that the demand for refined copper assumed enormous proportions and created quite a sensational advance in values, the latest quotation for electro being 13⅞c., as compared with 13⅜c. a week ago. Lake copper rules at 14 cents.

Not since the boom in copper in 1906 has such a sharp rise in prices and such activity in the consumptive business been experienced in so short a time. The demand was most eager and came from all quarters, revealing a remarkable power of absorption on the part of the trade, not only in Europe but in America also. We are informed that consumers in the States are not well supplied, and that in view of the improvement in trade a further increase in the consumption is expected. India, after remaining out of our market for some weeks past, is now also sending bids for large lines of yellow metal. Manufacturers in this country are heavily booked with orders for sheets and tubes and the electrical industry has never been busier.

The Ship Canal Lock at Buffalo

The United States Ship Canal lock at Black Rock harbor, Buffalo, N. Y., which is the largest inland-water lock in the world, constructed at a cost of $1,250,000, is completed. The lock overcomes a fall of 5 ft. in Niagara River, between the foot of Lake Erie and Black Rock harbor at the International Bridge, and is situated at the north end of the ship canal. This canal affords a safe passage down the river to the new Erie Barge Canal terminals at Tonawanda, just north of Buffalo. The interior dimensions of the lock are: Length, 650 ft., width 70 ft., minimum depth 24 ft. The capacity is sufficient for the largest freighters on the lakes. The length over all, including operating gates and valves, is 800 ft. The lock gates are each 37 ft. wide and 32 ft. deep, the freeboard being 8 ft. The gates are of steel and will be operated by electricity. It was necessary in preparing for the construction of the lock, which is of concrete, to build a coffer dam 947 ft. long and 260 ft. wide, larger even than the one around the Maine in Havana harbor. The contract for the lock was let by the Federal Government to the D'Olier Engineering Company, Philadelphia, three years ago. The lock will be placed in service next summer.

Steel Corporation Bonuses to Employees

Statements which have appeared in financial newspaper columns in the past week, evidently from authoritative sources, are to the effect that the bonus distributions made to employees in the more responsible positions are less for this year than for 1910. Last year the total was reported at $2,700,000, of which 60 per cent. was in common stock at $70 a share and 40 per cent. in cash; but earnings for this year have been considerably below those for 1910. Subscriptions to the stock of the corporation under its profit-sharing plan will be received in the next two weeks, the basis being close to 110 for the preferred and from 65 to 70 for the common stock. Between 25,000 and 30,000 employees are now stockholders of record. Since the profit-sharing plan became operative in 1903, employees have subscribed for a total of 237,362 shares of preferred and 44,437 shares of common stock, a total of 282,000 shares.

Chairman E. H. Gary gave out the following statement December 27 regarding the bonus distribution and the employees' stock subscription: "The United States Steel Corporation has made its usual distribution to the employees of the corporation and subsidiary companies under its bonus plan, which has been in force nine years. The amount distributed for 1911 is $1,450,000. The corporation will also offer to its employees the right to subscribe for about 25,000 shares of stock as usual on the basis of the plan which has been in force for the period above stated. The price has not yet been fixed, but it will probably be a little lower than the market."

Four-fifths of the excavation required to complete the Panama Canal had been done at the beginning of December. There remained only 39,669,715 cu. yd. of material to be removed, and that task is expected to be completed within the next year.

The Crane Company, Chicago, gave its employees a Christmas bonus of 10 per cent. of their annual salaries, making a total distribution of $500,000. This is the thirteenth year that a Christmas distribution has been made, bringing the total amount given to employees up to $3,750,000.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Dec. 27, 1911.	Dec. 20, 1911.	Nov. 29, 1911.	Dec. 28, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2 standard, Philadelphia	$14.85	$14.85	$14.85	$15.50
Foundry No. 2, Valley furnace	13.00	13.00	13.00	13.75
Foundry No. 2 Southern, Cincinnati	13.25	13.25	13.00	14.25
Foundry No. 2, Birmingham, Ala.	10.00	10.00	9.75	11.00
Foundry No. 2, at furnace, Chicago*	14.00	14.00	14.00	16.00
Basic, delivered, eastern Pa.	14.25	14.25	14.50	14.75
Basic, Valley furnace	12.25	12.25	12.25	13.25
Bessemer, Pittsburgh	15.15	15.15	14.90	15.90
Gray forge, Pittsburgh	13.40	13.40	13.25	13.90
Lake Superior charcoal, Chicago	*16.00*	16.50	16.50	18.00
COKE, CONNELLSVILLE,				
Per Net Ton, at Oven:				
Furnace coke, prompt shipment	1.75	1.60	1.50	1.40
Furnace coke, future delivery	1.65	1.65	1.60	1.70
Foundry coke, prompt shipment	1.90	1.90	1.85	1.90
Foundry coke, future delivery	2.15	2.15	2.10	2.10
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	20.00	19.00	19.00	23.00
Open hearth billets, Pittsburgh	20.00	19.00	18.50	23.00
Forging billets, Pittsburgh	26.00	25.00	24.00	28.00
Open hearth billets, Philadelphia	22.40	21.40	21.40	24.50
Wire rods, Pittsburgh	24.50	24.50	25.00	28.00
OLD MATERIAL, Per Gross Ton:				
Iron rails, Chicago	14.75	14.75	14.50	15.50
Iron rails, Philadelphia	16.00	16.00	15.50	17.00
Car wheels, Chicago	13.25	13.00	12.50	13.50
Car wheels, Philadelphia	12.50	12.50	11.50	13.00
Heavy steel scrap, Pittsburgh	12.50	12.25	12.00	13.50
Heavy steel scrap, Chicago	10.50	10.25	9.50	12.00
Heavy steel scrap, Philadelphia	12.25	12.25	11.50	12.50
FINISHED IRON AND STEEL,				
Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.27½	1.25	1.20	1.32½
Iron bars, Pittsburgh	1.25	1.25	1.20	1.35
Iron bars, Chicago	1.15	1.15	1.15	1.35
Steel bars, Pittsburgh	1.15	1.15	1.05	1.40
Steel bars, tidewater, New York	1.31	1.31	1.21	1.56
Tank plates, Pittsburgh	1.15	1.15	1.10	1.40
Tank plates, tidewater, New York	1.31	1.31	1.26	1.56
Beams, Pittsburgh	1.15	1.15	1.10	1.40
Beams, tidewater, New York	1.31	1.31	1.26	1.56
Angles, Pittsburgh	1.15	1.15	1.10	1.40
Angles, tidewater, New York	1.31	1.31	1.26	1.56
Skelp, grooved steel, Pittsburgh	1.15	1.15	1.12½	1.25
Skelp, sheared steel, Pittsburgh	1.20	1.20	1.20	1.30
SHEETS, NAILS AND WIRE,				
Per Pound to Largest Buyers:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	1.90	1.90	1.85	2.20
Wire nails, Pittsburgh	1.55	1.55	1.50	1.70
Cut nails, Pittsburgh	1.50	1.50	1.45	1.60
Fence wire, annealed, 0 to 9, Pittsburgh	1.35	1.35	1.30	1.50
Barb wire, galv., Pittsburgh	1.90	1.90	1.85	2.00
METALS,				
Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	14.25	14.00	13.25	13.00
Electrolytic copper, New York	14.12½	13.87½	13.12½	12.75
Spelter, St. Louis	6.20	6.15	6.80	5.50
Spelter, New York	6.35	6.30	6.95	5.60
Lead, St. Louis	4.35	4.35	4.35	4.35
Lead, New York	4.45	4.45	4.45	4.50
Tin, New York	45.25	45.00	45.25	38.45
Antimony, Hallett, New York	*7.60*	7.75	7.60	7.75
Tin plate, 100-lb. box, New York	$3.64	$3.64	$3.64	$3.84

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb., New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c; New Orleans, 30c.; Birmingham, Ala.; 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thinnest edge	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.15c. Other shapes and sizes are quoted as follows:

	Cents per lb.
I-beams over 15 in.	1.20 to 1.25
H-beams over 18 in.	1.30 to 1.35
Angles over 6 in.	1.20 to 1.25
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras, as per steel bar card Sept. 1, 1909	1.20 to 1.25
Tees, 3 in. and up	1.20 to 1.25
Zees, 3 in. and up	1.15 to 1.20
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909	1.20 to 1.25
Deck beams and bulb angles	1.45 to 1.50
Hand rail tees	2.00 to 2.15
Checkered and corrugated plates	2.00 to 2.15

Sheets.—Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advances for small lots from store, are as follows:

Blue Annealed Sheets.

	Cents per lb.
Nos. 3 to 8	1.30 to 1.35
Nos. 9 and 10	1.40 to 1.45
Nos. 11 and 12	1.45 to 1.50
No. 13 and 14	1.50 to 1.55
Nos. 15 and 16	1.60 to 1.65

Box Annealed Sheets, Cold Rolled.

	One Pass.	Three Pass.
Nos. 10 to 12	1.55 to 1.60	.....
Nos. 13 and 14	1.60 to 1.65	.....
Nos. 15 and 16	1.65 to 1.70	1.75 to 1.80
Nos. 17 to 21	1.70 to 1.75	1.80 to 1.85
Nos. 22, 23 and 24	1.75 to 1.80	1.85 to 1.90
Nos. 25 and 26	1.80 to 1.85	1.90 to 1.95
No. 27	1.85 to 1.90	1.95 to 2.00
No. 28	1.90 to 1.95	2.00 to 2.05
No. 29	1.95 to 2.00	2.05 to 2.10
No. 30	2.05 to 2.10	2.15 to 2.20

Galvanized Sheets of Black Sheet Gauge.

Nos. 10 and 11	1.90 to 1.95
Nos. 12, 13 and 14	2.00 to 2.05
Nos. 15, 16 and 17	2.15 to 2.20
Nos. 18 to 22	2.30 to 2.35
Nos. 23 and 24	2.40 to 2.45
Nos. 25 and 26	2.60 to 2.65
No. 27	2.75 to 2.80
No. 28	2.90 to 2.95
No. 29	3.00 to 3.05
No. 30	3.20 to 3.25

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations:

Corrugated Roofing Sheets, Per Square.

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
29	....	$2.30	23	$2.35	$3.45
28	$1.30	2.45	22	2.55	3.65
27	1.45	2.50	21	2.75	4.00
26	1.55	2.60	20	3.00	4.30
25	1.80	3.00	18	4.00	5.65
24	2.05	3.10	16	4.85	6.45

Wire Rods and Wire.—Bessemer, open hearth and chain rods, $24.50. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, $1.35; galvanized, $1.65. Carload lots, to retailers, annealed, $1.45; galvanized, $1.75. Galvanized barb wire to jobbers, $1.85; painted, $1.55. Wire nails, to jobbers, $1.55.

The following table gives the prices to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 Lb.

Nos.	0 to 9	10	11	12 & 12½	13	14	15	16
Annealed	$1.50	$1.55	$1.60	$1.65	$1.75	$1.85	$1.95	$2.05
Galvanized	1.80	1.85	1.90	1.95	2.05	2.15	2.55	2.65

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from December 1, 1911:

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
Butt Weld.				
⅛ and ¼ in.	74	54	68	48
⅜ in.	75	65	69	59
½ in.	78	68	72	62
¾ to 1½ in.	81	73	75	67
2 to 3 in.	82	75	76	69
Lap Weld.				
1¼ and 1½ in.	..	..	68	61
2 in.	79	72	72	65
2½ to 4 in.	81	74	74	67
4½ to 6 in.	80	72	73	65
7 to 12 in.	78	68	71	61
13 to 15 in.	55	..	47	..
Butt Weld, extra strong, plain ends, card weight				
⅛, ¼, ⅜ in.	70	60	65	55
½ in.	75	69	70	64
¾ to 1½ in.	79	73	74	68
2 to 3 in.	80	74	75	69
Lap Weld, extra strong, plain ends, card weight.				
1½ in.	..	..	66	60
2 in.	76	70	71	65
2½ to 4 in.	78	72	73	67
4½ to 6 in.	77	71	72	66
7 to 8 in.	70	60	65	55
9 to 12 in.	65	55	60	50
Butt Weld, double extra strong, plain ends, card weight.				
½ in.	65	59	60	54
¾ to 1½ in.	68	62	63	57
2 to 3 in.	70	64	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	66	60	61	55
2¼ to 4 in.	68	62	63	57
4½ to 6 in.	67	61	62	56
7 to 8 in.	60	50	55	45
Plugged and Reamed.				
1 to 1½, 2 to 3 in. Butt Weld 2, 2½ to 4 in. Lap Weld	Will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld as specified.			

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.		*Charcoal Iron.*	
1¾ to 2¼ in.	65	1½ in.	48
2½ in.	67½	1¾ to 2¼ in.	50
2¾ to 3¼ in.	72½	2½ in.	55
3½ to 4 in.	75	2¾ to 5 in.	60
5 to 6 in.	67½		
7 to 13 in.	65		

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.
Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discounts, lowered by two points.

Pittsburgh

PITTSBURGH, PA., December 27, 1911.

Owing to the holiday season local conditions in the iron trade in the past week were quiet as compared with the activity of the previous two or three weeks. Yet there have been no indications of weakening in prices, the market being strong all along the line, firmly holding the higher prices on some lines of finished material. The local pig iron market is quiet, but several firms report that actual sales this month have been the heaviest for any one month this year. The steel market is showing a good deal of activity, the leading producers being practically sold up for the first half of the year, prices quoted now being fully $1 a ton higher than two weeks ago. Specifications against contracts for finished material are fairly heavy, and are expected to be more active after the first of the year. Mills rolling plates, structural shapes, sheets, steel bars and tin plate have an enormous amount of business on their books for first half delivery, and, with the new business that is expected naturally to come in, no recessions in prices are expected in the near future at least. The outlook for the first half of 1912 is regarded as encouraging, but it is not believed that prices for that period will be much higher than they are now.

Pig Iron.—Prices are fairly strong, and several of the local sellers report that actual orders booked so far this month are the heaviest in any one month this year. The Pittsburgh Steel Company is still negotiating for a large amount of basic pig iron for delivery over the first half of next year, and it is understood will close for at least part of it this week. It is reported that one Shenango Valley furnace interest has quoted below $12.25 on 600 to 800 tons per day over the first half on this inquiry. Foundries have been buying heavily this month, and one local consumer has closed in the past week for about 8000 tons of No. 2 foundry iron for delivery over first half, on the basis of $13 at Valley furnace. A sale of 1000 tons of Bessemer for January and February, and 200 tons for January delivery, are reported at $14.25, Valley furnace. We also note a sale of 2000 tons of forge iron for first quarter at $12.50, Valley furnace, and 1000 tons of Northern No. 2 foundry at $13.00, Valley furnace, for first half of 1912 delivery. We quote: Bessemer iron, $14.25; malleable Bessemer, $12.75; basic, $12.25 to $12.50; gray forge, $12.50 to $12.75; No. 2 foundry, $13 to $13.25, all at Valley furnace, the freight rate for delivery in Pittsburgh district being 90c. a ton.

Steel.—The steel market has been active in the past week, the Carnegie Steel Company having closed some very large contracts for billets and sheet and tin bars for delivery over first half of 1912 on sliding scale contracts. In fact, this company is practically out of the market as a seller of billets and sheet bars for first half of next year. It reports that its actual orders in the billet and rail sales department sent to the mills for rolling this month, up to and including Saturday, December 23, were 65,000 tons heavier than in the same period in November. The new inquiry for forging billets is active and prices are higher. We quote: Bessemer and open-hearth billets, 4 x 4 in., up to 0.25 carbon, $20; Bessemer and open-hearth sheet bars, $21, and forging billets, $26, Pittsburgh or Youngstown.

Ferromanganese.—A New York importer reports a sale of 100 tons of 80 per cent. for first quarter delivery to an Eastern consumer at the new price of $41, Baltimore, the freight rate for delivery in the Pittsburgh district being $1.95 a ton.

Ferrosilicon.—The local situation is quiet, most consumers being covered for first quarter and first half of 1912. The market is very strong, and the minimum price now quoted on 50 per cent. is $70, Pittsburgh. Prices on the lower grades are not so firm, and we quote 10 per cent. at $21; 11 per cent., $22, and 12 per cent., $23, f.o.b., cars at furnace, Ashland, Ky., or Jackson, Ohio.

Muck Bar.—New inquiry is light, but prices are strong. We quote best grades made from all pig iron at $28 to $28.50, Pittsburgh.

Skelp.—The mills that roll iron and steel skelp report quite a heavy inquiry and state that prices are fully $1 a ton higher than were ruling two or three weeks ago. A sale of 2000 tons of sheared steel skelp is reported to a local pipe mill for first quarter delivery. We quote grooved steel skelp at 1.15c. to 1.17½c.; sheared steel skelp, 1.20c. to 1.22½c.; grooved iron skelp, 1.42c. to 1.45c., and sheared iron skelp, 1.62½c. to 1.65c., all for delivery at buyer's mills in the Pittsburgh district.

Wire Rods.—The local market is dull, but the price of $24 on Bessemer and open-hearth rods, put out several weeks ago by two of the leading makers, has been withdrawn and the minimum price of Bessemer, open-hearth and chain rods is now $24.50, Pittsburgh.

Steel Rails.—The Edgar Thomson rail mill at Bessemer, Pa., is still shut down for repairs, but is scheduled to start January 2. The Carnegie Steel Company reports that its actual sales and specifications received against contracts for light rails received last week were the heaviest in any one week this year. This company has sold 3000 tons of splice bars to a Southern road and 500 tons to another road. We quote splice bars at 1.50c. per lb., and repeat quotation on rails: Standard sections, 1.25c. per lb.; 8 and 10-lb. light rails, 1.25c.; 12 and 14-lb., 1.16c.; 16, 20 and 25-lb., 1.12c.; 30 and 35-lb., 1.10c., and 40 and 45-lb., 1.08c., f.o.b. at mill.

Structural Material.—New inquiry in the past week has been considerable. The McClintic-Marshall Construction Company has taken 3500 tons for new steel buildings for the Baldwin Locomotive Works at Eddystone, Pa., 500 tons of bridge work for the Baltimore & Ohio railroad at Chicago and 500 tons for new buildings for the American Car & Foundry Company at

Chicago. The American Bridge Company has taken 1200 tons for a new hotel building in the South and 600 tons for an apartment house. The Jones & Laughlin Steel Company has booked 700 tons for area work on the New York Central railroad in New York City. Prices on plain material are firmer and 1.15c. is absolute minimum, with 1.20c. being quoted on a good many inquiries. We quote beams and channels up to 15-in. at 1.15c. to 1.20c. at mill, Pittsburgh.

Plates.—Persistent reports that the Pennsylvania Railroad had active inquiries out for 20,000 all-steel cars, equipped with 70-ton trucks, are denied by two of the steel car companies here. It is only inquiring for 3000 to 6000 cars of that type. Orders for steel cars in the past week were light, but some fairly large inquiries are out. The Pennsylvania Lines West are inquiring for 1000 coke, 1000 gondola and 1000 box cars. The Grand Trunk is in the market for 500 express, 500 refrigerator and 300 ballast cars, and the Canadian Pacific Railroad for 200 refrigerator cars. The Pullman Company at Pullman, Ill., has taken a contract for 2500 steel underframe box cars for the Chicago, Rock Island & Pacific railroad, and the Delaware, Lackawanna & Western has inquiries out for 300 refrigerator cars. The Pressed Steel Car Company is operating its McKees Rocks Works to about 60 per cent. of capacity, but is doing very little at its Woods Run plant. The Standard Steel Car Company is running its Butler, Pa., steel car works full time and is pretty well filled up for the first three months of next year. We quote ¼-in. and heavier plates at 1.15c. to 1.20c. f.o.b. maker's mill, Pittsburgh

Sheets.—It is stated with regard to the recently organized Association of Sheet and Tin Plate Manufacturers that the leading sheet and tin plate interest is not identified with it, and a number of independent mills have so far declined to join it. Conditions in the local sheet trade are better than for some time, new demand and specifications against contracts being heavier, and the mills are operating to a fuller rate of capacity, said to be about 75 per cent. Prices are being well maintained on the basis of 1.40c. for Nos. 9 and 10 blue annealed sheets, 1.90c. for No. 28 black and 2.90c. for No. 28 galvanized, in carload and larger lots f.o.b. maker's mill, jobbers charging the usual advance for small lots from store

Tin Plate.—The mills are now receiving specifications against the heavy contracts placed some time ago by the meat packers and can makers, and operations have increased to about 75 per cent. of capacity, as against 50 per cent. a month ago. Three or four of the leading independent tin plate mills are operating to full capacity and advise us they expect to do so for the first three months of the year at least. The regular price of tin plate remains at $3.40 per base box for 14 x 20 coke plates, and it is said that this price is being better observed. We quote $3.40 per base box for 14 x20 coke plates, f.o.b. at mill.

Bars.—In the past week new orders and specifications against contracts for steel bars have not been so active as in the previous two or three weeks, but after the first of the year specifications are expected to be more active. The rapid advances in prices of steel bars from 1.05c. to 1.15c. and 1.20c. has naturally had the effect of curtailing new demand, some consumers waiting to find out whether the higher prices are going to hold. We quote steel bars at 1.15c. to 1.20c. for delivery through the first quarter, and common iron bars at 1.25c. to 1.30c., maker's mill.

Hoops and Bands.—New inquiries are better and specifications against contracts are also coming in more freely than for some time. We quote steel bands at 1.15c. to 1.20c., extras as per the steel bar card, and hoops at 1.25c. to 1.30c. for delivery through first half of 1912, f.o.b. cars maker's mill, Pittsburgh.

Railroad Spikes.—There has been a lull in new buying and in specifications in the past week following the activity of several weeks. Most of the leading railroads are now covered on their requirements of railroad spikes for first half of 1912, but are specifying quite freely. We quote railroad spikes at $1.40 base per 100 lb, f.o.b. Pittsburgh.

Rivets.—Makers report that new orders and specifications against contracts are coming in a little more freely, but that so far there has been little or no betterment in prices. We quote structural rivets at 1.40c. to 1.45c. and boiler rivets at 1.50c. to 1.55c. in carload and larger lots, f.o.b. Pittsburgh.

Shafting.—New buying is rather quiet, but specifications against contracts from the implement makers have been coming in quite freely for some time. Trade with automobile builders is quiet. We quote cold-rolled shafting at 65 per cent. off in carload and larger lots and about 60 and 5 per cent. in small lots, delivered in base territory.

Spelter.—The market has been fairly strong in the past week, and we quote prime grades of Western spelter at 6.15c., East St. Louis, or 6.27½c., Pittsburgh.

Wire Products.—The demand for wire and wire nails is reported to be a little better so far this month than in November. However, jobbers and retailers are still confining orders mostly to small lots to cover current needs. We quote: Wire nails, $1.55; cut nails, $1.50; galvanized barb wire, $1.85; painted, $1.55; annealed fence wire, $1.35; galvanized fence wire, $1.65, f.o.b. Pittsburgh, usual terms, freight added to point of delivery.

Merchant Pipe.—The new demand for small sizes of merchant pipe in December was heavier than in November, but line pipe is very dull and no large jobs are actively in the market aside from the inquiry of the Southern Gas Company of California for 150 miles of 12-in. pipe, and it is stated this contract may possibly be closed this week. V. Q. Hickman, of this city, has sold 25 miles of 2 to 3-in. line pipe to the High Grade Oil Company, Butler, Pa., making in all about 70 miles furnished to the company by Mr. Hickman, all of which has been rolled by the Youngstown Sheet & Tube Company. The pipe mills have recently put out new discounts on oil country goods, including the mid-continent and California districts, showing a slight reduction on most sizes and slight advances on others. Prices on oil country goods have been more or less shaded for some time, and the mills state that these new discounts are simply a readjustment of prices to represent actual conditions that have existed. Discounts on iron and steel pipe are being fairly well maintained.

Merchant Tubes.—New inquiries and orders for locomotive tubes have been very active in the past two or three weeks, and local makers have taken some large contracts for delivery in first quarter and first half of 1912. Demand for merchant steel tubes is dull and prices continue to be materially shaded. The merchant steel tube trade this year has been very unsatisfactory to the mills.

Iron and Steel Scrap.—The Jones & Laughlin Steel Company is still buying quite freely of selected grades of heavy steel scrap for delivery at Aliquippa, Pa., it being the intention of the company to start its open hearth plant at that place shortly after January 1. This company is credited with having bought 50,000 to 60,000 tons of heavy steel scrap for Aliquippa in the past month or six weeks. As usual at the holiday season the scrap trade is dull, consumers not caring to take in anything they can possibly postpone until after the turn of the year. Prices have shown no important change in the past week. Dealers quote as follows, per gross ton, f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$12.50 to $12.75
No. 1 foundry cast	11.75 to 12.00
No. 2 foundry cast	10.75 to 11.00
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	12.50 to 12.75
No. 1 railroad malleable stock	11.25 to 11.50
Grate bars	9.00 to 9.25
Low phosphorus melting stock	15.25 to 15.50
Iron car axles	20.50 to 21.00
Steel car axles	16.00 to 16.25
Locomotive axles	22.00 to 22.50
No. 1 busheling scrap	11.00 to 11.25
No. 2 busheling scrap	7.00 to 7.25
Old car wheels	12.00 to 12.25
*Cast iron borings	8.75 to 9.00
*Machine shop turnings	9.00 to 9.25
†Sheet bar crop ends	13.75 to 14.00
Old iron rails	14.50 to 14.75
No. 1 wrought scrap	12.00 to 12.25
Heavy steel axle turnings	9.75 to 10.00
Stove plate	9.00 to 9.25

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

†Shipping point.

Coke.—The shut down in the coke regions on account of the Christmas holiday has created a decided scarcity in the supply of standard grade of furnace coke and in the last few days dealers have been asking $1.75 to $1.80 per net ton, at oven, for furnace coke for spot shipment. Sales of 2000 tons in one lot and 5000 tons in another are reported at $1.70 to $1.75, at oven, and on a large inquiry to-day a local coke maker quoted $1.80. It is not believed that this condition will last, and it is probable that after the coke ovens are going again in the regular way the market will be easier. For this week we quote best makes of furnace coke for spot

shipment at $1.75 to $1.80 per net ton, at oven. Consumers of blast furnace and foundry coke are pretty well covered for the first half, and there is very little new inquiry. We quote best makes of furnace coke for first half at $1.65 to $1.75 and 72-hr. foundry coke for first half of next year at $2.15 to $2.25 per net ton, at oven. The output of coke in the Upper and Lower Connellsville regions last week showed a decrease from the previous week of 20,000 tons or more, this being largely due to the Christmas holiday.

Chicago

CHICAGO, ILL., December 27, 1911. (*By Telegraph.*)

Because of the need in which the mills stand as regards rails, the placing of orders for 60,000 tons by the Chicago & Northwestern, 15,000 tons by the Soo and 4000 tons by the Nickel Plate were the important transactions of the week. The approaching holiday season seemed not to affect greatly the tonnage of orders for finished steel products received by local mills, but the decrease in pig iron buying, which has been gradual, was sharply accentuated. The Chicago market has assumed some of the firmer aspects prevailing more pronouncedly in the East, but the advance to higher levels seems much more difficult of attainment here. During the week scrap melters have been covering for their requirements very actively and the market for old material continues to move sharply upward. While little additional business is expected to materialize before January 1, the feeling prevails here that January and February will be months of steady buying in good volume.

Pig Iron.—Buying interest in pig iron seems to have culminated at least temporarily. A large carbuilding interest has been figuring on the purchase of sufficient tonnage to cover its requirements, but it is understood that satisfactory prices have not been offered. Despite the large tonnage sold in the past few weeks, the market for Southern iron continues at $10, Birmingham, and for the major portion of the business placed quotations were equivalent to less than this basis. Local iron remains at $14. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal	$16.00 to $16.50
Northern coke foundry, No. 1	14.50 to 15.00
Northern coke, foundry, No. 2	14.00 to 14.50
Northern coke foundry, No. 3	13.50 to 14.00
Northern Scotch, No. 1	16.00
Southern coke, No. 1 foundry and No. 1 soft	14.85
Southern coke, No. 2 foundry and No. 2 soft	14.35
Southern coke, No. 3	14.10 to 14.35
Southern coke, No. 4	13.85 to 14.10
Southern gray forge	13.60 to 13.85
Southern mottled	13.60 to 13.85
Malleable Bessemer	14.35 to 14.50
Standard Bessemer	16.75
Basic	14.75
Jackson County and Kentucky silvery, 6 per cent.	16.40
Jackson County and Kentucky silvery, 8 per cent.	17.40
Jackson County and Kentucky silvery, 10 per cent.	18.40

Structural Material.—The largest contract for fabricated steel reported in this market as awarded last week was placed with the Pennsylvania Steel Company, calling for 7270 tons for a bridge in Portland, Ore. Other contracts were for small quantities, and included 907 tons for a Soo Line ore dock extension, placed with the Milwaukee Bridge Company; 765 tons for the Greenlee Foundry Company, Chicago, taken by the American Bridge Company, and 272 tons for the William Lemp Brewing Company, St. Louis, to Christopher & Simpson, of that city. The Hurley Mason Company also bought about 320 tons of steel for a new smelter. Locally, architectural tonnage of structural material is very quiet and little is anticipated in this direction until February, when it is hoped that some of the new downtown buildings for which permits were taken out a few months ago will be ready for figures. A moderate volume of specifications and new orders for railroad bridge steel was received by the mills during the week. Mill orders for structural shapes are not so heavy as for plates and bars We quote for mill shipment, Chicago, 1.30c. to 1.35c. and from store 1.60c.

Cast Iron Pipe.—Improvement is noted in the cast iron pipe trade. At Portland, Ore., 8200 tons of 6 to 20-in. pipe was awarded to the United States Cast Iron Pipe & Foundry Company and 3800 tons to a local foundry. On December 29 the city of Minneapolis will receive tenders on 4000 tons of 6 to 24-in. pipe. The St. Paul Gas Company is also in the market for 2000 tons. We quote as follows, per net ton, Chicago: Water pipe, 4-in., $26.50; 6 to 12-in., $24.50; 16-in. and up, $24, with $1 extra for gas pipe.

(*By Mail.*)

Rails, Track Supplies and Railroad Equipment.—Rail purchases to the amount of 80,000 tons are reported for last week, including 60,000 tons for the Chicago & Northwestern, 15,000 tons for the Soo line and 4000 tons for the Nickel Plate. All of this tonnage is understood to have been placed with Chicago mills. Car buying is quiet, but apparently only for a breathing spell. The number of cars on which figures are being asked by the railroads is very large, and it is difficult to see how the prices of the materials required can be held down if the contemplated purchases materialize into orders during a short period. The specifying for track fastenings is fairly active. We quote standard railroad spikes at 1.50c., base; track bolts, with square nuts, 1.90c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c to 1.30½c.; angle bars, 1.50 c., Chicago.

Plates.—The holiday week seemed not to affect materially the tonnage of plates taken by the mills, which show increasing reluctance to contract for forward delivery. They are unwilling to do so except at an advance, and at the same time customers are being advised against anticipating market condition for next year which may not materialize. While no actual advances in prices have been made, a growing firmness in the attitude of the sellers is everywhere apparent. We quote for Chicago delivery, mill shipment, prompt, 1.30c. to 1.35c. and for delivery through the first half, 1.38c. From store we quote 1.60c.

Old Material.—Current market prices for scrap show advances of 25c. per ton on nearly all grades as compared with the quotations of a week ago. That values will continue to enhance seems inevitable. Scrap melters have been showing a very unusual activity in increasing their stocks. On the other hand, the dealers are working the market upward as strongly as possible by very conservative selling. Even rolling mill scrap, which has been quiet, is now in demand and there has been an active buying of special grades of heavy melting steel. Railroad lists of old material for which bids are being asked aggregate about 8000 tons, including 3600 tons from the Chicago, Rock Island & Pacific, 2700 tons from the Chicago, Burlington & Quincy and 1600 tons from the Soo. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails	$14.75 to $15.25
Old steel rails, rerolling	12.50 to 13.00
Old steel rails, less than 3 ft.	11.50 to 12.00
Relaying rails, standard section, subject to inspection	24.00
Old car wheels	13.25 to 13.75
Heavy melting steel scrap	10.50 to 11.00
Frogs, switches and guards, cut apart	10.50 to 11.00
Shoveling steel	10.00 to 10.50
Steel axle turnings	8.25 to 8.75

The following quotations are per net ton:

Iron angles and splice bars	$12.75 to $13.25
Iron arch bars and transoms	13.75 to 14.25
Steel angle bars	10.00 to 10.50
Iron car axles	17.75 to 18.25
Steel car axles	15.50 to 16.00
No. 1 railroad wrought	11.25 to 11.75
No. 2 railroad wrought	10.25 to 10.75
Steel knuckles and couplers	9.75 to 10.25
Steel springs	10.25 to 10.75
Locomotive tires, smooth	13.25 to 13.75
Machine shop turnings	6.25 to 6.75
Cast and mixed borings	5.75 to 6.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.25 to 6.75
No. 1 boilers, cut to sheets and rings	7.00 to 7.50
Boiler punchings	12.50 to 13.00
No. 1 cast scrap	11.00 to 11.50
Stove plate and light cast scrap	9.25 to 9.75
Railroad malleable	10.50 to 11.00
Agricultural malleable	8.75 to 9.25
Pipes and flues	7.75 to 8.25

Sheets.—The improvement as regards sheets noted last week has continued in even more pronounced degree. Concessions have been entirely eliminated and the tonnage of orders placed has grown in volume. A large buyer of sheets reports that one mill declined to quote for forward shipment, although contracts can be made with others covering delivery to July 1. A much more energetic tone prevails. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, to 2.08c.; No. 28 galvanized, to 3.08c.; No. 10 blue annealed, to 1.58c. Prices from store Chicago are: No. 10, 1.90c.; No. 12, 1.95c.; No. 28 black, 2.30c.; No. 28 galvanized, 3.35c.

Bars.—Western steel bar mills report their order books well filled, and this is borne out by a marked lessening in the aggressiveness with which orders are

sought on competitive business. Makers are now asking the top prices. The bar mills, while less favored in the matter of business booked, have been able to better their position in sympathy with the general market improvement, and quotations more nearly in line with their costs and the advancing prices of scrap are being obtained. We quote as follows, f. o. b. Chicago: Soft steel bars, 1.25c. to 1.33c.; bar iron, 1.15c. to 1.20c.; hard steel bars rolled from old rails, 1.15c. to 1.20c. From store: Soft steel bars, 1.50c. to 1.55c.; Chicago.

Wire Products.—Although sales the past week were hampered by the approaching holidays and the return of salesmen to headquarters, the effect of the new strength in prices was still apparent and the interest in wire products satisfactory. Current buying is largely in anticipation of spring trade, which now gives promise of considerable briskness. We quote: Plain wire, No. 9 and coarser, base, $1.53; wire nails, $1.73; painted barb wire, $1.73 to $1.78; galvanized, $2.03 to $2.08; polished staples, $1.78 to $1.83; galvanized, $2.08 to $2.13, all Chicago.

Philadelphia

PHILADELPHIA, PA., December 26, 1911.

Inquiries in nearly all branches of the iron trade have been gradually decreasing, showing the usual year-end characteristics. Pig iron purchases have been confined to small lots of foundry grades, although several fair sized quantities are still under negotiation. In finished material some business is pending, but the orders closed have been small. The old material market is quiet. Furnace coke is stronger, with $1.70 at oven more generally quoted for deliveries extending over the first half.

Iron Ore.—Importations during the week included 7658 tons of Newfoundland, 7022 tons of Swedish and 5300 tons of Cuban ore. Importations to date this year aggregate 995,189 tons.

Pig Iron.—Aggregate sales for December promise to exceed those of November, even though business has declined with the approach of the inventory period. Few large contracts were closed the past week, but negotiations for several round lots are pending. The sales were principally of the foundry grades. Local producers are less inclined to make sales for forward delivery at the present inside quotations, although there are several still quoting $14.85 to $14.90, delivered, for No. 2 X. A number of furnaces, being pretty well sold up for the first quarter, refuse to shade $15, with several holding firmly at $15.25, although they get little business. Several 1000-ton inquiries for first quarter delivery have come out, but others for deliveries into the third quarter and for the entire year, while reported, receive little attention from producers. Cast iron pipe makers are still negotiating for round lots of low grade iron, but sellers generally are somewhat stiffer in their ideas of prices. Moderate sales of Virginia foundry grades have been made for near future delivery at $12.25 and $12.50, furnace. Southern iron appears stiffer, small sales of No. 2 foundry having been made for early shipment in this district at $10.25, Birmingham. The demand for rolling mill forge iron is practically at a standstill. A sale of 3000 tons of Southern basic for first quarter delivery at $10, Birmingham, is reported. One lot of 3000 tons of standard analysis low phosphorus iron has been sold at a price equal to $19.25 delivered here, while small lots have been sold at $19.50. The general range of quotations shows no change, the following prices being named for standard brands, delivered in buyers' yards in this district:

Eastern Pennsylvania No. 2 X foundry	$14.85 to $15.25
Eastern Pennsylvania No. 2 plain	14.60 to 15.00
Virginia foundry	15.00 to 15.25
Gray forge	14.25
Basic	14.25 to 14.50
Standard low phosphorus	19.25 to 19.50

Ferroalloys.—While some few small orders for ferromanganese, which had been under negotiation, were put through early last week at $38.50, Baltimore, sellers are now quoting $41, but no business has been booked at the advanced price. Negotiations for 50 per cent. ferrosilicon, which is quoted at $70, delivered here, are still pending. Business in 10 to 12 per cent. ferrosilicon is quiet. This grade, inside the Bessemer limits as to phosphorus and sulphur, is quoted at $24.30 to $26.30, delivered.

Billets.—A fair volume of business is pending, but, as most makers are holding for slightly higher prices, consumers are slow to place orders. For forward shipment basic open-hearth rolling billets are held at $22.40, delivered here, although for prompt shipment small lots have been put through at $21.90. Forging billets have been in comparatively good demand at unchanged prices—$26.40 to $27.40, delivered.

Plates.—A moderate run of small orders have been placed. Consumers are still making efforts to contract for future delivery at inside quotations but have not been very successful. There is some further inquiry for boat plates, the aggregate tonnage before the trade being between 12,000 and 14,000 tons, but orders develop slowly. One for 700 tons was placed last week. Some good inquiries for boiler and tank plates are reported, but little actual business is expected to develop until after the turn of the year. Prices are somewhat firmer, ranging from 1.30c. to 1.40c., delivered, according to the nature of the business.

Structural Material.—The Baldwin Locomotive Works has placed the contract for its erecting shop addition, 4000 tons, with the McClintic-Marshall Construction Company. The general contract for the Stock Exchange Building will be placed, it is said, directly after the first of the year. Estimates are again being asked for the 13-story addition to complete the Bellevue-Stratford Hotel, requiring from 1500 to 1800 tons. A moderate amount of business in plain shapes has been moving, with prices unchanged at 1.30c. to 1.35c., delivered in this district.

Sheets.—While mills have largely suspended operations for the holidays, a sizable volume of business has been coming in. Consumers are placing some moderate forward orders on the basis of 1.40c., Pittsburgh, for No. 10, and would extend contracts to cover six months if mills would take the business. Western No. 28 sheets are quoted at 2.05c. minimum, delivered here, on which Eastern mills making smooth, loose-rolled sheets obtain ¼c. to ½c. per lb. advance.

Bars.—Several Eastern makers who have been accepting business under 1.20c., mill, have advanced their price to that basis, although in sharp competition 1.17½c. can still be done. The market, however, is decidedly firmer, even though the demand has not been particularly active. For first quarter shipment steel bars are quoted at 1.30c., delivered here.

Coke.—Prices of furnace coke are stiffer. Some Eastern consumers have bought against their recent inquiries at $1.65 to $1.70 at oven. In the majority of cases $1.75 is now quoted for the better grades for delivery over the first half. Prompt furnace coke is scarcer. Little new business is moving in foundry coke. Some moderate sales at $2.25 at oven, for near future delivery, are noted. The following range of prices, per net ton, is quoted for delivery in this vicinity:

Connellsville furnace coke	$3.75 to $4.05
Foundry coke	4.15 to 4.50
Mountain furnace coke	3.50 to 3.65
Foundry coke	3.95 to 4.40

Old Material.—The market has been rather quiet and prices, while strong, show practically no change. Buyers are giving little attention to the situation, being engaged with the usual mid-winter repairs and annual inventories. Greater activity is anticipated after the turn of the year. The following range of prices about represents quotations at which the ordinary current business for prompt shipment can be done for delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to $1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap	$12.25 to $12.75
Old steel rails, rerolling (nominal)	14.00 to 14.50
Low phosphorus heavy melting steel scrap	15.50 to 16.00
Old steel axles	17.50 to 18.00
Old iron axles	22.00 to 23.00
Old iron rails	16.00 to 17.00
Old car wheels	12.50 to 13.00
No. 1 railroad wrought	15.50 to 16.00
Wrought iron pipe	11.75 to 12.25
No. 1 forge fire	10.25 to 10.75
No. 2 light iron (nominal)	6.75 to 7.25
Wrought turnings	9.00 to 9.50
Cast borings	8.25 to 8.75
Machinery cast	13.25 to 13.75
Railroad malleable (nominal)	11.75 to 12.25
Grate bars, railroad (nominal)	10.00 to 10.50
Stove plate	10.25 to 10.75

The Rogers-Brown Iron Company, Buffalo, N. Y., will blow in early in January the No. 3 furnace of its Susquehanna group at South Buffalo, which is one of the two furnaces the company has had under construction in the past 18 months.

Cleveland

CLEVELAND, OHIO, December 26, 1911.

Iron **Ore.**—While the movement from docks is not heavy, shipments are better than they were at this time a year ago, and the liberal buying of pig iron indicates a good volume of such shipments this winter. Some new shipping orders have been received in the past few days. We quote prices as follows: Old range Bessemer, $4.50; Mesaba Bessemer, $4.25; old range non-Bessemer, $3.70; Mesaba non-Bessemer, $3.50.

Pig **Iron.**—There is a good buying movement in progress in foundry, basic and malleable iron. Contrary to expectations, the holiday season has not interfered with the activity. The market is firmer on all grades and sales are being made at higher prices. A consumer at Columbus who has an inquiry out for 10,000 tons of basic is understood to have bought a portion of it at $12.50, Valley furnace. Another basic sale is reported at $12.35. Other basic inquiries are pending aggregating about 20,000 tons. One local seller reports sales of iron during the week aggregating about 20,000 tons, about equally divided between foundry, malleable and basic. Another local selling agency has advanced its asking price 25c. a ton on all grades, now quoting No. 2 foundry at $13.50 and malleable at $13.25, Valley furnace. While a general advance in price has not been made by Cleveland furnaces on foundry grades, one seller has advanced its quotation to $13.25 at furnace for No. 2 foundry for outside shipment and is making sales at that price. There is still a good volume of inquiry for foundry grades. Sales have been mostly for delivery through the first half. We note the sale of 1500 tons of malleable at $13 and 2000 tons of foundry to a Tiffin manufacturer. Two sales of Northern and Southern aggregating 2500 tons are reported to consumers at Lansing, Mich. A northern Ohio furnace builder has an inquiry out for 2000 tons of Northern foundry. Southern iron is firmer, several sellers having advanced their asking price to $10.50, Birmingham, for No. 2. Some brands are still to be had at $10, however. We quote as follows for prompt shipment and for the first half, delivered Cleveland:

Bessemer	$15.15
Basic	13.25
Northern foundry No. 2	$13.25 to 13.50
Southern foundry No. 2	14.35 to 14.60
Gray forge	12.50
Jackson County silvery, 8 per cent. silicon	17.05

Coke.—The only activity is in small lots of foundry grades for prompt shipment. One local foundry just closed for its first half requirements but there are no other inquiries for contracts, although many foundries have not bought. A number of these will probably buy spot coke as needed. The scarcity of furnace coke for prompt shipment has resulted in a sharp advance, reports coming from the Connellsville region of sales at as high as $1.90 at oven. Standard Connellsville foundry coke is held at $2 to $2.15 per net ton, at oven, for spot shipment and $2.15 to $2.40 for contract.

Finished Iron and Steel.—Business has quieted down, as is usual during the holiday season, both in new orders and in specifications on contract. During the period of low prices mill agencies were very active in tying up consumers with contracts, and consumers of steel bars, plates and structural material are now mostly covered for their first quarter requirements at lower than present prices. Steel bars are firmly maintained at 1.15c., Pittsburgh, for spot shipment and first quarter delivery. A few new contracts have been closed at this price. The plate market is firmer. Mills generally are quoting plates at 1.20c., Pittsburgh, for spot shipment and the first quarter, and are getting orders at this price; the 1.15c. quotation, however, has not been withdrawn by some of the smaller mills. One leading producer has advanced its price for contracts to 1.25c. Structural material is quoted at 1.15c. to 1.20c., Pittsburgh, the former price being made by some of the sellers for round tonnages. Fabricators who have bid on some of the structural work now pending have secured protection during the past few weeks on the recent 1.10c. price, so that some of the work that will be let shortly will be based on the lower price of structural steel. Little new inquiry for structural material for building work is coming out. Bids for the 10,000 tons for the Michigan Central depot in Detroit will be received this week. The demand for sheets is fairly good. The new prices of 1.90c., Pittsburgh, for No. 28 black and 2.90c. for No. 28 galvanized appear to be firmly maintained. Railroads are buying track fastenings freely for the coming season. The demand for boiler rivets is quite active. A number of consumers have placed contracts for first half delivery at 1.55c., Pittsburgh. Structural rivets are quoted at 1.45c. to 1.50c. The demand for iron bars is not active; the price is unchanged at 1.20c., Cleveland.

Old Material.—While the market is quiet it has a firm tone. Dealers want to buy, but are not anxious to sell at present prices. They expect a good demand and an advance in prices soon after the first of the year. As a result little scrap can be had at a concession from present prices. Local steel mills are not actively in the market, although they might buy at attractive prices. Inquiry for old car wheels has caused their price to stiffen up somewhat. Dealers' selling prices per ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling	$12.25 to $12.75
Old iron rails	14.00 to 14.50
Steel car axles	17.50 to 18.00
Heavy melting steel	11.25 to 11.50
Old car wheels	12.25 to 12.50
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	10.50 to 11.00
Railroad malleable	11.75 to 12.00
Light bundled sheet scrap	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles	$18.50 to $19.00
Cast borings	6.25 to 6.50
Iron and steel turnings and drillings	6.75 to 7.00
Steel axle turnings	7.25 to 7.75
No. 1 busheling	9.00 to 9.50
No. 1 railroad wrought	11.00 to 11.25
No. 1 cast	11.00 to 11.50
Stove plate	9.00 to 9.25
Bundled tin scrap	11.00 to 11.50

Cincinnati

CINCINNATI, OHIO, December 27, 1911. (*By Telegraph.*)

Pig Iron.—Considering the season the volume of business transacted the past week has been very satisfactory. For first half delivery a Kentucky melter took 1500 tons of No. 2 Southern foundry and about 500 tons each went to two central Indiana consumers. Illinois furnished several nice sized orders for Southern mixed grades and numerous smaller purchases have materially aided in promoting a more optimistic feeling. While the bulk of business transacted has been on the basis of $10, Birmingham, for first half shipment, several furnaces have withdrawn this price and are demanding 25c. to 50c. a ton more, and as those making this advance are sold several months ahead they feel justified in refusing business, even from old customers, at the prevailing prompt shipment quotation. A central Ohio manufacturer will doubtless close for 1700 tons of foundry iron this week, and a southern Ohio melter will also probably book 2000 tons of mixed Southern grades. It is rumored that an Ohio rolling mill has made a further purchase of 5000 to 10,000 tons of basic, to be shipped the first half of next year. For shipment over the next six months a southern Ohio firm bought 1000 tons of malleable, and for nearby delivery three 100-ton lots were also booked. Northern iron is stationary at $13, Ironton, for No. 2 foundry or malleable. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton we quote, f.o.b. Cincinnati, as follows for prompt shipment:

Southern coke, No. 1 foundry and 1 soft	$13.75 to $14.00
Southern coke, No. 2 foundry and 2 soft	13.25 to 13.50
Southern coke, No. 3 foundry	12.75 to 13.25
Southern coke, No. 4 foundry	12.50 to 13.00
Southern gray forge	12.50 to 13.00
Ohio silvery, 8 per cent. silicon	16.45 to 16.95
Lake Superior coke, No. 1	14.70 to 14.95
Lake Superior coke, No. 2	14.20 to 14.45
Lake Superior coke, No. 3	13.70 to 13.95
Basic, Northern	14.20 to 14.45
Standard Southern car wheel	25.25 to 25.50
Lake Superior car wheel	19.00

(By Mail.)

Coke.—It is reported that a Southern consumer contracted for a 12 months' supply of Wise County furnace coke, the quantity estimated around 5000 tons a month. While both furnace and foundry grades are not in strong demand, prices are firmer, especially in the Connellsville field, where 48-hr. brands have brought as high as $1.75 per net ton at oven, for quick shipment. The average future shipment quotation is around $1.65. Pocahontas and Wise County prices are practically the same as those given for the Connellsville district. Foundry coke is quiet and is quoted at $2 for prompt movement and as high as $2.30 on contract business.

Finished Material.—Very little business is being transacted, and both mill agencies and dealers do not expect any improvement until about the middle of January. Current quotations are very firm, and 1.15c., Pittsburgh, is minimum on steel bars, with some not very desirable business booked at 1.20c. Local warehouse prices remain at 1.60c. on steel bars and around 1.70c. for structural material cut to lengths when desired.

Old Material.—The usual holiday season dullness prevails, and but little scrap material is changing hands. Dealers are not disposed to take on any further stocks just now, although a number of them look for a fairly brisk business during the remainder of the winter. The minimum figures given below about represent what buyers are willing to pay for delivery at their yards in southern Ohio and Cincinnati, and the maximum figures the selling prices f.o.b. at yards:

No. 1 railroad wrought, net ton	$9.75 to $10.50
Cast borings, net ton	4.50 to 5.00
Steel turnings, net ton	5.50 to 6.00
No. 1 cast scrap, net ton	9.50 to 10.25
Burnt scrap, net ton	6.50 to 7.00
Old iron axles, net ton	16.25 to 16.75
Bundled sheet scrap, gross ton	6.25 to 6.75
Old iron rails, gross ton	13.00 to 13.75
Relaying rails, 50 lb. and up, gross ton	20.75 to 21.50
Old car wheels, gross ton	10.50 to 11.00
Heavy melting steel scrap, gross ton	9.50 to 10.00

Birmingham

BIRMINGHAM, ALA., December 24, 1911.

Pig Iron.—Sales reported for the past week consist of 150 to 200 ton lots, with the aggregate of all engagements very small. An inquiry for 5000 tons, for delivery in the first half, has been made by a large pipe manufacturer, and a lot of 1000 tons of No. 3 foundry for shipment over the first quarter is still unclosed. There is a significant volume of business in the shape of small lots for delivery immediately after January 1, that is to be placed, but the outlook as a whole is perhaps not so encouraging as at the time of last report. There has been a very material shrinkage in the demand for foundry products, and in some instances new low levels for selling prices have been made. Such conditions have not only affected the views of melters as to providing for their future requirements, but have lessened the actual movement from furnace yards. The number of "holdups" against contracts that have recently become effective are given serious consideration and indicate that a much larger tonnage was engaged in many cases than was required. The percentage of last quarter bookings that will have to be carried over into the first quarter is not unusually large as shipments had been made at a very satisfactory rate until some 10 days ago, but instructions against first quarter engagements are being awaited with interest. Producers do not indicate any weakness in prices either for prompt or future deliveries, and the market is considered firm at a basis of $10, Birmingham. This price can be made applicable to deliveries covering the entire first half, but from certain furnaces only. With three of the furnace companies practically out of the market for any shipments after January 1, and another adhering to an advance of 25c. per ton on first quarter and 50c. per ton on second quarter shipments, only two concerns remain who are solicitous of additional business other than for spot delivery. This last can be had of practically all concerns at figures very close to the $10 basis, it being understood that some tonnage covered by warrants is obtainable at a lower figure than $10, Birmingham, in a cash transaction. We continue to quote the market for regular fracture grades as follows per gross ton f.o.b. cars, Birmingham, for shipment January through June:

No. 1 foundry and No. 1 soft	$10.50
No. 2 foundry and No. 2 soft	10.00
No. 3 foundry	9.50
No. 4 foundry	9.25
Gray forge	9.00
Standard basic	10.00
Off basic	9.50

Cast-Iron Pipe.—It is now understood that the tonnage of water pipe required at Portland, Ore., was divided between the United States Cast Iron Pipe & Foundry Company and the company located at Oswego, Ore. The latter will furnish certain sizes only, the bulk of the tonnage going to the United States Company. The figures at which this business was placed are not made public. Several small quantities of gas pipe are under consideration, and plans for some water works improvement at Southern points will soon add to the business in sight. All local plants have been closed down until after the holidays, but will resume operations with orders for sufficient tonnage on their books to warrant a steady output for 30 to 60 days. We continue to quote as follows, for water pipe, per net ton, f. o. b. cars here: 4 to 6 in., $23; 8 to 12 in., $22; over 12 in., average, $21, with $1 per ton extra for gas pipe. Special fittings are quotable at $45 to $50 per net ton at foundry.

Old Material.—The demand for all steel grades has improved and a liberal tonnage of wrought and machinery scrap is being disposed of. Very little interest in country grades is manifested, and in that particular direction the market is very weak. Some inquiry for iron and steel axles is pending, and there is a ready demand for old car wheels. Dealers' asking prices are as follows, per gross ton f. o. b. cars here:

Old iron axles (light)	$12.00 to $12.50
Old steel axles (light)	11.00 to 11.50
Old iron rails	11.00 to 11.50
No. 1 railroad wrought	10.00 to 10.50
No. 2 railroad wrought	8.50 to 9.00
No. 1 country wrought	6.00 to 6.50
No. 2 country wrought	5.50 to 6.00
No. 1 machinery	8.50 to 9.00
No. 1 steel	8.00 to 8.50
Tram car wheels	7.50 to 8.00
Standard car wheels	9.50 to 10.00
Light cast and stove plate	6.00 to 6.50

Finished Material.—Local interests report a liberal volume of specifications for bars and round iron during the week with the recent advance in prices fully maintained. The movement of wire continues very satisfactory and an advance of $1 per ton on wire nails was made effective December 15.

Formal charge of the properties of the Birmingham Coal & Iron Company will be taken January 1 by the Woodward Iron Company, the purchaser. No announcement has been made of any proposed changes in operations, but the offices of the company acquired will be moved from Birmingham to the Woodward furnace plant at Woodward, Ala.

The Bonnyman-Norman Coal & Iron Company has been organized for the sale of pig iron, coal and coke. James Bonnyman, who has been in charge of the properties of the Birmingham Coal & Iron Company for a number of years, is president; J. A. Norman, former sales manager of the same company, vice-president and treasurer; A. H. Andrew, secretary. The company will have offices at 907 Brown-Marx Building, in this city, and will establish branch offices at Atlanta, Ga., and New Orleans, La.

St. Louis

ST. LOUIS, MO., December 26, 1911.

Casting up of totals for the month and for the year has been in progress with the result that it has been found that the massed figures are larger than had been anticipated. Prices generally are more firmly held where they have not advanced during the week.

Pig Iron.—The week's business for the most part was made up of an aggregate of small tonnages, chiefly because the buyers of large quantities who are not covered evidently decided that there was not likely to be any exceptional change during the holiday week and that they could afford to wait until the first of the coming month and year. At that time considerable contracting for the second quarter is expected to make its appearance. Prices are firmer than at last report and No. 2 Southern, $10.25, Birmingham basis, is pretty generally observed, especially for second quarter delivery. Northern No. 2 is well held at $13.50, Ironton basis. Inquiries still unfilled include one for 1000 tons of malleable.

Coke.—There is a firmer tendency in coke, though it has not reached the proportions of a sharp advance. The best feature of the market is the disposition of consumers to request anticipation of their contracts in the shipments, which emphasizes the reports of increased consumption of pig iron. By-product coke is moving well at $5.10 delivered.

Finished Iron and Steel.—The aggregate tonnage of business booked runs daily into good figures in all divisions except, perhaps, the standard rails. In structural material the specifications have been very good for the period. A preliminary round-up of the year's business is reported to show a much handsomer total than was anticipated, the result of a repeated receipt of small orders pretty much all through the year whose aggregate had not been fully appreciated. A good many customers have been found to have increased their consumption over 1910 by 20 per cent. In bars the market is better and the orders have been very fair for the time of the year. In plates there has been very little doing, the needs in the car plants having been pretty well contracted for. In light rails the coal roads are taking some tonnage, but not more than 50 per cent. of what they should be taking at this season. This is believed to be largely the result of the anticipated strike of the miners April 1, the companies preferring to put themselves in the best financial position possible. The lumber interests are taking a little,

but not enough to regard it seriously. Only absolute needs are being covered, as in the coal districts. Track fastenings have been in fair demand at firm prices.

Old Material.—The scrap market is in better fettle than for weeks and prices generally are quotably higher. Inquiry is coming in from the mills direct and the dealers are still hustling to cover their shortages before the market gets out of their reach. The only list to come out the past week was that of the Chicago & Eastern Illinois, about 600 tons. This is expected to go at higher prices. A generally active market is looked for after the first of the year. We quote dealers' prices, per gross ton, f. o. b. St. Louis, as follows:

Old iron rails	$14.00 to $14.50
Old steel rails, rerolling	12.00 to 12.50
Old steel rails, less than 3 ft	11.50 to 12.00
Relaying rails, standard section, subject to inspection	22.00 to 22.50
Old car wheels	13.00 to 13.50
Heavy melting steel scrap	11.50 to 12.00
Frogs, switches and guards cut apart	11.50 to 12.00

The following prices are per net ton:

Iron fish plates	$12.50 to $13.00
Iron car axles	18.50 to 19.00
Steel car axles	16.50 to 17.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Railroad springs	10.25 to 10.75
Locomotive tires, smooth	14.00 to 14.50
No. 1 dealers' forge	8.00 to 8.50
Mixed borings	6.50 to 7.00
No. 1 busheling	9.50 to 10.00
No. boilers, cut to sheets and rings	8.50 to 9.00
No. 1 cast scrap	11.00 to 11.50
Stove plate and light cast scrap	8.50 to 9.00
Railroad malleable	9.00 to 9.50
Agricultural malleable	7.50 to 8.00
Pipes and flues	8.50 to 9.00
Railroad sheet and tank scrap	8.50 to 9.00
Railroad grate bars	8.00 to 8.50
Machine shop turnings	7.50 to 8.00

Buffalo

BUFFALO, N. Y., December 26, 1911.

Pig Iron.—The demand for the past week was unusually good, considering that it was the week before Christmas. It is estimated that 30,000 to 35,000 tons of foundry and malleable and a considerable tonnage of basic was sold in this territory for first and second quarter shipment. A good number of orders have also been received to-day, but producers do not expect the inquiry and placement to hold up during the mid-holiday week to as large a total as for last week, particularly as salesmen are not now aggressively in the field. Purchasers, with few exceptions, are asking for rush shipments on contracts and consumption is evidently more than keeping pace with furnace output. Price schedules remain practically unchanged, most sellers still quoting the same for second quarter delivery as for first quarter and prompt shipment. One furnace interest, however, announces that it has nothing to sell except for second quarter and its lowest price for any grade of iron is $13.75. We quote as follows, f.o.b. furnace, for second half delivery:

No. 1 X foundry	$13.50 to $14.00
No. 2 X foundry	13.50 to 13.75
No. 2 plain	13.25 to 13.50
No. 3 foundry	13.00 to 13.25
Gray forge	13.00
Malleable	13.50 to 14.25
Basic	14.00 to 14.25
Charcoal	15.50 to 17.00

Finished Iron and Steel.—The demand continues fairly good in general lines, although the market shows some indications of holiday quiet, new buying being less in volume for the current than for the preceding week. Customers whose contracts expire at the end of the year, and who have not yet covered for first quarter and first half requirement, are now closing, and there are pronounced indications of much larger business after the first of the year. While specifications against contracts have been of fair volume, many users are deferring specifying until after inventories are completed, being now engaged in that and other work incident to the closing of the year. In sheets, both black and galvanized, the demand is increasing and more tonnage is moving. Prices are firmer, with some probability of an advance about the first of the year. In fabricated structural material business continues active, with a stronger tendency in prices. The Buffalo Structural Steel Company has secured the contract for fabrication and erection of the steel for the new cathedral for the Roman Catholic diocese of Buffalo, taking 600 tons. The Jones & Laughlin Steel Company has been awarded a contract for steel for the Lockwood store and office building, 250 tons, and the Charles F. Ernst Sons Iron Works was low bidder for the 150 tons of steel required for the remodeled Teck Theater. The New England Structural Steel Company, Worcester, Mass., has received a contract for the 1200 tons of steel required for the 12-story Bancroft Hotel in that city, for which Buffalo architects drew plans and received bids. Plans are under way for the Buffalo terminal passenger station for the Delaware, Lackawanna & Western Railroad at the foot of Main street, which, with the elevated structure for entrance, will require about 5000 tons.

Old Material.—The market shows considerable betterment in demand, and most dealers are inclined to hold for higher prices, being of the opinion that there will be a further enlargement in demand after the holiday and inventory period and a corresponding improvement in prices. We quote as follows, per gross ton, f.o.b., Buffalo:

Heavy melting steel	$13.00 to $13.25
Low phosphorus steel	15.75 to 16.25
No. 1 railroad wrought	14.00 to 14.50
No. 1 railroad and machinery cast scrap	13.50 to 14.25
Old steel axles	18.50 to 19.00
Old iron axles	22.00 to 22.50
Old car wheels	12.75 to 13.00
Railroad malleable	12.75 to 13.00
Boiler plate, sheared	13.75 to 14.25
Locomotive grate bars	11.00 to 11.25
Pipe and tank	9.75 to 10.25
Wrought iron and soft steel turnings	7.25 to 7.50
Clean cast borings	6.75 to 7.00

Boston

BOSTON, MASS., December 26, 1911.

Old Material.—The market as a whole remains firm, the improvement noted a week ago continuing. Prices are unchanged. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of $2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices.

Heavy melting steel	$9.50 to $10.00
Low phosphorus steel	11.45 to 11.95
Old steel axles	14.00 to 14.50
Old iron axles	17.00 to 18.00
Mixed shafting	12.75 to 13.25
No. 1 wrought and soft steel	11.00 to 11.25
Wrought iron pipe	9.25 to 9.50
Skeleton (bundled)	7.00 to 7.50
Cotton ties	7.00 to 7.50
No. 2 light	4.50 to 5.00
Wrought turnings	5.00 to 5.50
Cast borings	4.50 to 5.00
Machinery, cast	12.50 to 13.00
Malleable	9.25 to 9.75
Grate bars	6.00 to 6.50
Stove plate	8.00 to 8.50

The Perry, Buxton & Doane Company, the new Massachusetts corporation which will conduct the iron and steel scrap and metal business formerly carried on by the William H. Perry Company, E. Burton & Sons Company, Buxton & Doane Company and F. R. Phillips & Sons Company, will after January 1 have its main office at 307 to 311 Atlantic avenue, Boston, opposite Rowe's Wharf, with a branch office in the Pennsylvania Building, Philadelphia. Yards and local offices will be continued at Chelsea and Lowell, Mass.; Providence and Pawtucket, R. I.; Portland, Maine; South Boston and Worcester, Mass. Practically no change will be made in the personnel of the management or in the methods of operation, but improved facilities will enable the company to better serve the requirements of customers.

The German Iron Market

Buyers Find Difficulty in Placing Orders

BERLIN, December 15, 1911.

The strong tone of the market continues unchanged, but there is less in the way of price improvement to report. A steady increase of orders is mentioned. The demand for crude steel of all kinds is so heavy that difficulty is experienced by buyers in getting their orders taken and this naturally causes the greater pressure among them to make their arrangements as far ahead as possible, and at as early a day as they can.

Additional evidence of the strength of the pig-iron market is at hand. At a conference several days ago between the Luxemburg-Lorraine and Essen groups of the syndicate it was reported that sales for the first half of 1912 have proceeded at an extraordinarily ani-

mated pace, and that some of the furnaces are already sold out for that period. A movement is also on foot in the syndicate looking toward the opening of sales for the second half-year at an early date, and at a still higher scale of prices. The big concerns of mixed production are in part not only unable to sell any iron but are even buying additional quantities for their own consumption. Hence supplementary orders for small amounts for delivery before the end of the year still appear in the market. The Luxemburg-Lorraine district reports quite unusual activity in foundry iron, with a heavy foreign demand. Shipments this month are unusually heavy, and the export movement has grown brisker, in view particularly of the fact that Russia has now decided to admit a certain quantity of pig duty-free into Russian Poland. The pressure of mills there to secure foreign iron is all the more remarkable when the heavy production of the local furnaces this year is taken into consideration. The production of Russian Poland for 11 months to the end of November showed an increase over last year of above 15 per cent. The market for scrap remains strong and active; most consumers have covered their requirements for the first quarter of 1912.

The calls for delivery of steel billets on existing orders are still running considerably in excess of allotments, although the Union turned over some of its orders to outside open-hearth concerns. The export demand has considerably increased and prices for foreign delivery are still rising. Billets for export are now sold at 88 to 90 marks, f.o.b. seaport, and muck bars at 90 to 92 marks. Shipments of beams and other structural shapes continue unusually large for the season. The mills are working so steadily on current orders that they have not been able as yet to begin replenishing their stocks, as they are accustomed to do at the beginning of winter. The export business in heavy steel rails continues very good, with new orders continually coming into sight. The export price ranges between 105 and 110 marks, f.o.b. seaport.

Steel bars have grown still more active, particularly for the export trade, which is sending in considerable orders for the quickest possible delivery. Prices for export continue rising. Dealers are complaining that the mills are slow in delivering, their orders having mostly been placed when prices were lower than now; the mills are giving the preference to more recent purchases at higher prices. Iron bars are being turned out at about the full capacity of the mills, and prices are firm. In band iron buying for next year has grown more active, and this applies also to cold-rolled strips. For plates the demand remains extremely active, as previously reported. Wire rods show a steadily improving tendency, with prices moving upward. Wire dealers are buying more actively, as they need considerable amounts for the spring trade.

Syndicate Affairs

The outlook for the prolongation of the Steel Works Union is reported this week to be considerably less satisfactory. The negotiations between the Coal Syndicate and outside mines, which had been proceeding for some weeks, were broken off several days ago without result, and this is expected to react unfavorably upon the Union's renewal, as the fate of the two great organizations is generally regarded as hanging together. A decidedly pessimistic tone begins to be heard in the iron trade about the future of the Union. At the annual meeting several days ago of the Rombacher Hüttenwerke (Lorraine) the president of the board expressed himself regarding the prospects in very cautious terms. He spoke of the great difficulties growing out of the heavy demands for allotments by some of the big concerns; the strongest expression of confidence that he would venture to make was that "the hope was not to be abandoned that the Union may be renewed, although in a changed, probably more restricted, form."

According to the latest information the allotment claims are now even greater than previously reported, amounting to not less than 5,250,000 tons total increase, 4,000,000 tons of which is for class B products. The increases asked for in bars alone amount to not less than 2,000,000 tons, whereas existing allotments are 3,500,000 tons. Allotments in wire-rods now amount to 750,000 tons, but the new applications would bring the total up to 1,250,000 tons, and the total asked for in tubes is 396,000 tons, against 221,800 tons now. Similarly, allotments in plates would have to be raised to 1,600,000 tons, against 1,030,000 tons at present. The heaviest demands for new allotments came from the Luxemburg-Lorraine district. If they are all granted the southwestern iron district, which also includes the Saar region, would reach 6,500,000 tons of crude steel, or 40 per cent. of the total allotments.

It is reported that a feeling of anxious concern exists among the member companies over the state of things created by these demands. To make matters worse, applications have again been sent in to the Union for a 20 per cent. increase of allotments in bars, plates and tubes, taking effect at once and holding till the end of June. Some of the applicants even ask that the increase be made retroactive to the first of last April or July. Leading spirits in the organization are described as being exasperated to a high degree over these renewed applications, which have already been voted down several times; and it is predicted that there will be some stormy talk at the meeting of the Union next week.

It is reported that the pig-iron and coal syndicates are considering the question of abolishing the drawbacks that they give on finished products for encouraging the export trade. This means that export prices have now risen to so near the home market level that no special encouragement for export is needed.

The Belgian market has again sent in news of rising prices. This time iron bars and thin plates have risen for export, the former to 100 to 102 shillings, and the latter to 129 to 131 shillings. The whole Belgian trade is showing a steady upward movement that gains in intensity from week to week.

New York

NEW YORK, December 27, 1911.

Iron Ore.—Furnaces which use a certain percentage of New Jersey ores have been in the market in the past two weeks and sales of 100,000 to 150,000 tons have been made at practically the prices for these ores which prevailed in earlier months of this year, representing a range of 7¼c. to 7½c. a unit for ores running about 60 per cent. in iron. There is some inquiry from Eastern Pennsylvania for low phosphorus ore to be used in mixtures containing Lake Champlain ores. There has been some canvassing of the situation by Lake Superior ore sellers to ascertain what demand there may be for Lake ores in the East in 1912. Eastern furnaces companies contend that only a material reduction in the 1911 price of Lake ores would warrant their use in competition with foreign ores. Cleveland ore firms are not willing at this time to say, however, how much of a reduction, if any, they will make for 1912, and it is considered doubtful policy to make a preferential price on such ores shipped into Eastern districts, even though some precedents of this sort can be cited.

Pig Iron.—The principal buying of the past week in this district has been done by a large locomotive company which in ten days has probably bought about 10,000 tons for plants at Pittsburgh, Dunkirk, Richmond and Schenectady. It is believed further buying will be done for the last-named plant. Virginia, Eastern New York, Buffalo and Western Pennsylvania furnaces are reported to have shared in this business, rather less iron going to the Buffalo district than in some preceding contracts of this company. A sale of 1000 tons of iron for delivery in the first half of 1912 was made this week to a New York State foundry. As noted one week ago Eastern buying is considerably less than in the first half of the month and the quietness of the market is not so much due to the season as to the fact that the principal melters have supplied themselves with iron for from three to six months ahead. One Lebanon Valley furnace is about going in but one or two small furnaces in Eastern Pennsylvania are likely to go out. It does not appear that any actual advance is being paid by buyers of foundry iron, though furnaces in the Buffalo district and some in Eastern Pennsylvania have advanced their quotations 25c. to 50c. a ton where delivery throughout the first half of next year is called for. Quotations are as follows for northern iron at tidewater: No. 1 foundry, $15 to $15.25; No. 2 X, $14.75; No. 2 plain, $14.50 to $14.75. For southern iron we quote $15 to $15.25 for No. 1 foundry and $14.50 to $14.75 for No. 2 foundry.

Finished Iron and Steel.—A falling off in demands for immediate delivery and diminished attention to the price situation show that the holiday condition has arrived in the trade. There is substantially no new inquiry of size, but in the structural field it is confidently expected that a number of large pending projects will be closed before January 1. While prices remain at last week's figures, there still seems to be a

lack of stability in quotations on fabricated work and structures promising quantities of material involving few sizes are being strongly competed for. At least one other structural possibility, that of the Allyn House, Hartford, Conn., 1500 tons, has been relegated to the class being redesigned. The especially live structural work includes the Auerbach candy factory, 2500 tons; the 20-story Hess loft building, Twenty-sixth street and Fourth acenue, 3000 tons; the Bing & Bing loft at Twentieth street and Broadway, 4500 tons, and the Cooper Union building, 1200 tons. The Yale & Towne Mfg. Company, it is stated, will erect a 12-story building on East Fortieth street and John Downey is contractor. The Baldwin Locomotive Works structure at Eddystone, Pa., 3500 tons, has been contracted for by the McClintic-Marshall Construction Company; the Dock street pier, Philadelphia, 1000 tons, has been awarded to the Philadelphia Steel & Wire Company; the American Bridge Company is to supply 1300 tons of bridges for the Buffalo, Rochester & Pittsburgh; the New England Structural Company, 1500 tons, for the Gilchrist building, Boston; the Wisconsin Bridge & Iron Company, 1400 tons, for the Grand Trunk; the Phoenix Iron Company, 200 tons, for the Pennsylvania Railroad at Newark, N. J.; Cambria Steel Company, 800 tons, for the Detroit Edison Company's extension; the Virginia Bridge & Iron Company, 350 tons, for bridges for the Southern Railroad, and the Phoenix Iron Company, 200 tons, for two bridges for the Scranton & Binghamton Railroad. The New Haven road has an inquiry out for a 150-ton bridge at Ferry street, New Haven, and bids are being taken for a 12-story building on West Twenty-fifth street, New York, for the Building & Engineering Company, 900 tons. Bids were taken December 26 for the New York Central for three bridges totaling 350 tons. Quotations are: Steel bars, plates and plain structural material, 1.31c. to 1.36c.; bar iron, 1.27½c. to 1.32½c., all New York. Plain material and plates from store, New York, 1.60c. to 1.70c.

Cast Iron Pipe.—No developments of importance have occurred this week. Carload lots of 6-in. are quoted at $22 to $23 per net ton, tidewater.

Old Material.—The market is exceedingly quiet, but prices are firmly held, dealers looking forward to a much better demand after the turn of the year. As the weaker holders have been pushing their scrap on the market during the late dullness, and some of the largest dealers are no longer active factors, it is believed that the tonnage of any one class of material now being held is not very heavy, particularly good steel scrap. Dealers' prices per gross ton, New York and vicinity, are as follows:

Old girder and T rails for melting	$10.25 to $10.50
Heavy melting steel scrap	10.25 to 10.50
Relaying rails	20.50 to 21.00
Rerolling rails (nominal)	12.00 to 12.50
Standard hammered iron car axles	20.00 to 20.50
Old steel car axles	15.50 to 16.00
No. 1 railroad wrought	12.50 to 13.00
Wrought iron track scrap	12.00 to 12.50
No. 1 yard wrought, long	11.00 to 11.50
No. 1 yard wrought, short	10.25 to 10.50
Light iron	4.75 to 5.00
Cast borings, clean	6.50 to 6.75
Mixed borings and turnings	5.50 to 5.75
Wrought turnings	6.75 to 7.00
Wrought pipe	9.75 to 10.00
Old car wheels	12.00 to 12.50
No. 1 heavy cast, broken up	11.00 to 11.50
Stove plate	8.75 to 9.00
Locomotive grate bars	9.00 to 9.50
Malleable cast	10.00 to 10.50

Ferroalloys.—With large demands still unsatisfied, the ferroalloys maintain their prices firmly in New York. For 80 per cent. ferromanganese $41, Baltimore, is asked and for 50 per cent. ferrosilicon $70. Pittsburgh. Sales are reported at those figures, which, however, might be shaded in deals for large lots. The trade is quiet.

The annual meeting of the Society of Automobile Engineers will be held in New York City January 18, 19, and 20. This is during the week of the commercial vehicle division of the automobile show at Madison Square Garden. The sessions of the society will take place in the assembly hall of the same building. Among the papers named on the advance programme of the meeting are the following: "Compound Gas Engines and Their Efficiency," by Eugene P. Batzell; "Definitions in Connection with Physical Properties of Steel," by Henry Hess; "Silent Chains," by Chester S. Ricker; "Balance of Motors," by Ernest R. Fried; "Self Starters for Gasoline Motors," by J. W. Fitzgerald; "Multiple Disk Clutches," by Joseph A. Anglada. Several divisions of the now famous Standards Committee will have reports to present. The society now has 1200 members.

Metal Market

NEW YORK, December 27, 1911.

The Week's Prices

Cents Per Pound for Early Delivery.

	Copper, New York.			Lead		Spelter	
Dec.	Lake.	Electrolytic.	Tin, New York.	New York.	St. Louis.	New York.	St. Louis.
21	14.12½	14.00	44.80	4.45	4.35	6.30	6.15
22	14.25	14.12½	44.90	4.45	4.35	6.30	6.15
23	14.25	14.12½	.....	4.45	4.35	6.35	6.20
26	14.25	14.12½	45.00	4.45	4.35	6.35	6.20
27	14.25	14.12½	45.25	4.45	4.35	6.35	6.20

Trade in metals has assumed an almost nominal aspect as a result of the holidays, but the dullness has not affected prices, which generally are firm and steady. No special features appear in any metal.

New York

Copper.—The copper market is strong and predictions are free that prices will stiffen still more. To-day electrolytic is quoted at 14.12½c. and Lake at 14.25c., prices which have ruled firmly for almost a week. There has been fair buying. Many large consumers have been holding off, but they may have to meet the prevailing prices for there are no signs of any weakness in quotations. Publicity was given late last week to the statement that an English syndicate had practically cornered the European market and following this came a report that American interests also were heavily interested in speculation to control the market. Without question speculation has played a large part at home and abroad. Here the big holders are understood to have unloaded to a considerable extent on the weaker operators. In London spot copper is quoted to-day at £63 10s. and futures at £64 7s. 6d. Exports this month have amounted to 28,676 tons.

Pig Tin.—The market in pig tin has been almost at a standstill in all save prices during the week, made so by the Christmas holidays and the consequent closing of the London and New York exchanges from Friday until to-day. What business has been done has been subject to frequent fluctuations in price, but domestic buying has been very light. A little weakness developed a week ago to-day and became more pronounced Thursday as a result of freer offerings of both spot and futures. Following Christmas a stronger feeling has developed, and to-day tin is quoted in New York at 45.25c., an advance of ¼c. based on early London advices. No considerable activity in tin is expected until after January 1. Spot tin was quoted in London this morning at £206, futures at £191 15s. Arrivals during the months have been 3488 tons and the amount afloat 1995 tons.

Tin Plates.—There is little or no change from the conditions of last week at the sales end, although manufacturers have opened more mills and are busy with the big orders already booked. Good buying is expected in the early part of the new year. Prices are unchanged, $3.64 being quoted in New York for 100-lb. coke plates. The price of tin plates laid down at Swansea, Wales, remains unchanged at 13s. 7½d.

Lead.—The lead market is dull and stagnant and has been so throughout the week. The New York price is unchanged at 4.45c. and in St. Louis 4.35c.

Spelter.—The week in spelter has been extremely quiet, although a little more strength has developed in the last two days, due probably to the appearance in the market of independent sheet iron galvanizers. The prices, which probably are subject to shading, are 6.35c., New York, and about 6.20c., St. Louis.

Antimony.—The antimony market is dull. Cookson's is quoted at 7.75c. to 7.87½c.; Hallett's at 7.60c. to 7.70c., and Hungarian and Chinese grades at 7c. to 7.12½c.

Old Metals.—Prices continue to advance. Dealers' selling prices are as follows:

	Cents per lb.
Copper, heavy and crucible	13.50 to 14.00
Copper, heavy and wire	13.25 to 13.50
Copper, light and bottoms	12.00 to 12.25
Brass, heavy	9.25 to 9.50
Brass, light	7.25 to 7.50
Heavy machine composition	11.25 to 11.50
Clean brass turnings	8.75 to 9.00
Composition turnings	9.50 to 10.00
Lead, heavy	4.25
Lead, tea	4.00
Zinc, scrap	5.25

Chicago

DECEMBER 26.—The activity in copper continues but an apparent pressure to sell has made prices a little easier. Tin has fluctuated somewhat during the week and at the close is held less firmly. Old metals, while not in demand, have benefited as a result of better market conditions. We quote at Chicago as follows: Cast

ing copper, 14c.; Lake, 14.25c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 45.50c.; small lots, 47.50c.; lead, desilverized, 4.40c. to 4.45c., for 50-ton lots; corroding, 4.55 c. to 4.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.30c. to 6.40c.; Cookson's antimony, 8.75c., and other grades, 7.75c. to 8.25c., in small lots; sheet zinc is $8.25, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount, in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 11.75c.; copper bottoms, 10.50c.; copper clips, 11.50c.; red brass, 10.50c.; yellow brass, 8.25c; lead pipe, 4c.; zinc, 5c.; pewter, No. 1, 26c.; tinfoil, 33c.; block tin pipe, 38c.

St. Louis

DECEMBER 25.—The metal markets for the past week have been strengthening up a bit. Lead is back to previous quotations, having reached 4.47½c. and being well held. Spelter is strong at 6.25c., with holders asking 6.30c. Tin is markedly higher at 45.40c. Lake copper is firmer at 14.72½c., and electrolytic, 14.60c. Antimony is quoted at 8.22½c. In the Joplin ore market during the week zinc blende showed a maintenance of the gain of last week and the top price was $47 per ton, ranging down to $40 with the grades offered. Higher prices are looked for. The top price for calamine was $30 per ton, with a range down to $22, according to grade. Lead ore was strong, bringing $60 to $64 per ton in the central camps, but the outlying districts quoted lower prices. On miscellaneous scrap metals we quote as follows: Light brass, 4.50c.; heavy brass and light copper, 8.50c.; heavy copper and copper wire, 9.50c.; zinc, 3.50c.; pewter, 20c.; tin foil, 29c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, December 27, 1911.

Prices of securities have been quite steady, the market influences now tending to sustain values. Great Northern Ore certificates advanced sharply on reports that the prospecting conducted by the United States Steel Corporation had uncovered much more ore than had been originally estimated. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalmers, com.....	1⅜	Ry. Springs, com....	30⅝- 31¾
Allis-Chalmers, pr...	8 - 8¾	Republic, com.....	27½- 28
Baldwin Loco., pr...	103⅞-104	Repumlic, pr.....	84 - 85¼
Beth. Steel, com....	30 - 30½	Pipe, com.....	16¼- 17
Beth. Steel, pr.....	59⅛- 61¼	Pipe, pr.....	51 - 52
Can, com.....	10⅝- 11	U. S. Steel, com....	68⅛- 69⅜
Can, pr.....	89⅝- 90	U. S. Steel, pr....	111¼-111⅝
Car & Fdry, com....	53¾- 55	Westinghouse Elec..	67¼- 70⅛
Steel Foundries.....	33 - 33½	Va. I. C. & Coke.....	69
Colorado Fuel.....	27½- 28	Am. Ship, com.....	50¼
General Electric....	154½-156	Chi. Pneu. Tool.....	46½- 46⅝
Gr. N. Ore Cert....	35⅝- 40⅛	Cambria Steel.....	44¼- 44¾
Int. Harvester, com.	109 -112	Lake Sup. Corp.....	26½
Int. Harvester, pr.....	120½	Warwick	11½- 11⅞
Int. Pump, pr.....	83	Crucible Steel, com.	12¼- 13¼
Locomotive, com....	35½- 37⅛	Crucible Steel, pr...	82 - 83
N. Enam. & St. com.	12½- 13¾	Harb Walk Ref., com.....	40
Pittsburgh Steel, pr.....	101		

Dividends Declared

The Westinghouse Electric & Mfg. Company, regular quarterly, 1¾ per cent. on the preferred stock, payable January 15.

The Vulcan Detinning Company, regular quarterly, 1¾ per cent. on the preferred stock, payable January 20.

The American Rolling Mill Company, regular quarterly, 1½ per cent. on the preferred stock and 3 per cent. on the common stock, payable January 15.

An independent boxboard manufacturer estimates that in the last few years shareholders of boxboard concerns in the United States have lost approximately $75,000,000. The greater portion of this loss has been due to the impossibility of making trade agreements within the Sherman law. The producing capacity is far in excess of consumptive requirements.

The litigation between the Krupps and the Midvale Steel Company relating to armor plate patents reached the United States Supreme Court last week, an appeal being filed by the Krupp interests. In the lower court the suit was dismissed for lack of evidence.

Personal

It has been for some time the purpose to establish our Pittsburgh editorial office on a footing more fully recognizing the importance of that district from the standpoint of market as well as of manufacturing and technical developments in iron and steel. We are pleased to announce that the carrying out of this plan is now made possible by the appointment of Robert A. Walker as Pittsburgh resident editor of *The Iron Age* and that after January 1 Mr. Walker will devote himself entirely to our editorial interests. He has long been connected with the publications of the David Williams Company in the Pittsburgh office, and for the past 25 years has been both business and editorial manager in that district. It need hardly be said, that in view of his thorough familiarity with the industry there and his long acquaintance with those who are making its history, the new arrangement is a distinct advance step.

W. B. Robinson, for the past year Philadelphia manager of *The Iron Age* and Iron Age-Hardware, has been appointed Pennsylvania manager of *The Iron Age*, in charge of advertising, with headquarters at both Pittsburgh and Philadelphia. Mr. Robinson is well known to the iron and steel and metal working trades in the Pittsburgh district from more than five years' successful connection with iron trade journalism in that field. The new appointment is effective January 1.

S. George Freund has opened an office as consulting engineer for foreign trade at 100 Broadway, New York. He is prepared to assist American and German manufacturers in matters relating to import, export and manufacture and the exploitation of patents. He was connected with the electrical engineering department of the Interborough Rapid Transit Company during the construction of the subway and has been engaged in other engineering work in this country. Since 1901 he has been the American correspondent for the German Electrotechnische Zeitschrift. He has just returned from Europe, where he opened an office at Grunewaldstrasse 99, Berlin.

Lionel Samuel, director and joint manager of Cammell Laird & Co., of New York, is not seeking re-election for the coming year, his personal affairs requiring his entire attention. As general agent of the English company, he established its offices here some years ago. Mr. Samuel is not only well known in New York but also in Mexico and Central and South America, with some of whose governments he has had large business relations.

C. B. Flint has resigned his position as manager of the supply department of Manning, Maxwell & Moore, Inc., to become president of Flint & Chester, Inc., which will be ready January 1 to conduct a business exclusively in railroad, machinists' and contractors' supplies at 237-239 Lafayette street, New York. A. T. Chester is secretary and treasurer.

A. R. Dwight, formerly with A. M. Castle & Co., will be connected after January 1 with Theodore Geissmann & Co., Inc., Commercial National Bank Building, Chicago, mill representatives for iron, steel and wire products.

S. T. Wellman, who has been in California for the past year, engaged chiefly in an investigation of electric smelting, was injured recently by falling from a platform, sustaining a compound fracture of the leg.

The W. Bingham Company Changes Ownership

The W. Bingham Company, Cleveland, Ohio, wholesale and retail dealer in hardware and manufacturers' and mining supplies, has been reorganized under new management, and its capital stock has been increased from $400,000 to $1,000,000. The control of the company has passed to Henry L. Thompson, vice-president and general manager of the Bostwick-Braun Company, Toledo, Ohio, and to William H. Knight, secretary of the same company. J. E. Greene, the present president of the company, and some of the other officers will retire. The officers of the reorganized company will be as follows: C. W. Bingham, president; H. L. Thompson, vice-president and general manager; William H. Knight, secretary and treasurer. The company will enlarge its present quarters considerably.

Obituary

The friends of Charles Kirchhoff, who was for so many years editor of *The Iron Age*, will be pained to learn of the death of his mother which occurred at his home, 244 Riverside Drive, New York, December 21. She had attained an advanced age, 83 years.

FREDERICK C. KLEIN, Pittsburgh, president of the Klein-Logan Company, manufacturer of railroad tools, died December 21, aged 86 years. He was born in Germany, but came to this country 65 years ago. He located first in Albany, N. Y., then removed to Cleveland, Ohio, and finally settled at Pittsburgh in 1848, when he became engaged with his brother in the manufacture of soap. At the outbreak of the Civil War he enlisted in the Fifth Regiment of Pennsylvania, heavy infantry, and served a year as lieutenant. He then became a partner with his brother in the Birmingham Tool Works, located on the South Side. In 1868 the firm of Klein & Logan was organized, incorporating in 1891. He was twice married and leaves a widow and three sons.

ARNOLD TANZER, treasurer of the International Steam Pump Company, and a writer of editorials and book reviews for the magazines, died December 21, at his home in New York City, aged 71 years. He was born in Prague and was graduated from the College of the City of New York in 1859. He was one of the founders of the Standard Club, the Purim Association, and the Young Men's Hebrew Association.

ARTHUR W. PARMELEE, president of the American Card Clothing Company, and former president and treasurer of the Wire Goods Company, died December 23 at his home in Worcester, Mass., aged 69 years. He was born in Utica, N. Y., and began his career as a clerk in his father's hardware store in Buffalo.

DAVID J. THOMAS, for many years connected with the Sterret-Thomas Foundry Company, Pittsburgh, died December 12, aged 79 years.

ROBERT CHRISTIE, head of the Christie Machine Works, San Francisco, Cal., is dead.

The Buffalo Union Furnace Company's Industrial Railroad Case.—The Interstate Commerce Commission has merged the Buffalo Union Furnace order regarding its industrial railroad with the commission's general inquiry into the matter of allowances to short line railroads serving industries, docket No. 4181. At the same time it postponed indefinitely the effective date of the order, with the intimation that such date would be set as soon as there is a result in No. 4181. In the meantime, however, the complainant in the furnace case is allowed to proceed with the presentation of proof as to the amount of reparation that should be awarded in compliance with the terms of the order which, but for this action, would have become effective January 2. The postponement of the effective date is the result of agreement among counsel for the railroads and the complainant. The subject matter of No. 4181 is being inquired into by the Stanley Committee of the House of Representatives.

Farrar & Trefts and East Buffalo Iron Works Combine.—The business of Farrar & Trefts, Buffalo, N. Y., builders of engines, boilers and general machinery, and of the East Buffalo Iron Works, maker of gray iron castings, has been consolidated under the name of Farrar & Trefts, Inc. The capital stock of the incorporated company is $400,000. The officers of the consolidated company will be George M. Trefts, president; John C. Trefts, vice-president; W. A. McDougal, treasurer and general manager, and Edward Oldman, secretary. Both plants will continue to be operated, and the offices will be at 60 Perry street.

Dienelt & Eisenhardt, Inc., machinists and engineers, 1504 North Howard street, Philadelphia, Pa., state that the recent death of Almon P. Wint, secretary of the corporation, has caused no interruption to the business. William F. Siegener, president, and Philip J. Mitchell, treasurer, are both men of wide practical experience and fully conversant with every detail of the corporation's business and policy.

Pittsburgh and Vicinity Business Notes

The Howard Axle Works of the Carnegie Steel Company, at Homestead, Pa., is now running to full capacity for the first time in three years, about 400 men being employed.

An action over an interest valued at $681,000 in the business of Dilworth, Porter & Co., Ltd., manufacturers of railroad spikes and other products, was instituted at Pittsburgh last week by Elizabeth Louise Dilworth, widow of Charles R. Dilworth, who states that by her husband's will she was to have his interest in the firm. She asks that the members of the firm be enjoined from exercising rights in her share and that they admit her to ownership.

The Cambria Steel Company, Johnstown, Pa., is building a large addition to its electric power department located between Nos. 5 and 6 blast furnaces and the Pennsylvania Railroad. Some orders for electrical equipment have been placed and more will be needed.

V. Q. Hickman, Union Bank Building, Pittsburgh, is furnishing 25 miles of 2 and 3-in. line pipe to the High Grade Oil Refining Company, Butler, Pa. This makes a total of 70 miles of pipe furnished to this buyer by Mr. Hickman, all of which has been rolled at the pipe mills of the Youngstown Sheet & Tube Company.

Bids are being taken by the Carnegie Technical Schools, Pittsburgh, for a four-story building to be used by the School of Applied Science, which will cost $350,000. James L. Stuart, Oliver Building, Pittsburgh, is consulting engi-

A Huge Pennsylvania Locomotive.—One of the largest locomotives in the world has just been built for the Pennsylvania Railroad. It will be tried out in freight service on steep grades of the mountains in western Pennsylvania, and if it proves satisfactory this type, known as the HH1, may be adopted. It is longer than the Pennsylvania's new all-steel passenger coaches. From the point of the pilot to the pulling face of the coupler on the rear of the tender the distance is 98 ft. 3¾ in. Its weight in working order, tender loaded, is 668,900 lb., being 238,000 lb. heavier than the class K2, the heaviest passenger engine, and 272,600 lb. heavier than the class H8b, the heaviest freight engine which the Pennsylvania is now using. There are four cylinders, each having a diameter of 27 in. and a stroke of 28 in. Each of the 61 driving wheels is 56 in. in diameter. The steam pressure is 160 lb. The inside dimensions of the fire box are 12 ft. ⅛ in. x 8 ft. ¼ in. The tender will hold 9000 gal. of water and 30,000 lb. of coal.

Preparations are being made by the Grand Trunk Railroad to rebuild the International Bridge at Buffalo so as to provide an additional track and also passageways for vehicles and pedestrians. Soundings have been made to determine the locations of the piers, which have to be on bed rock because the current at this point has a velocity of eight miles an hour. The cost of the bridge will be about $1,000,000.

The Globe Foundry Company, Port Chester, N. Y., has been thrown into bankruptcy by merchandise creditors, at the request of whom the court has appointed John H. Mueller, 258 Broadway, New York, temporary receiver. In a prior reorganization of the company he had acted as one of the trustees and is therefore familiar with the business. The liabilities are placed at $150,000 and the assets at $65,000.

The Worcester Pressed Steel Company, Worcester, Mass., is erecting a foundry, 21 x 31 ft., which will require a cupola and other equipment. It will be used for producing high grade iron and steel castings for dies and die beds for the company's own use.

The rail mill of the Maryland Steel Company at Sparrows Point, Md., resumed work December 27, after an idleness of nearly two months. The marine department at Sparrows Point is very busy with the construction of the steamers which the company contracted to build for the American-Hawaiian Steamship Company.

Sheet and Tin Plate Association

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At a dinner at the Fort Pitt Hotel, Pittsburgh, on the evening of December 19 attended by most of the incorporators of the new association, a number of the manufacturers spoke informally and an address was made by C. S. Trench, of the American Metal Market, New York.

The Eastern Steel Company's Warwick Lease

The directors of the Warwick Iron & Steel Company and those of the Eastern Steel Company have ratified the proposed lease of the Warwick furnaces at Pottstown, Pa., to the latter company on a basis which will pay the stockholders 8 per cent. on the par value of the stock. An option to purchase the Warwick Iron & Steel Company outright is included in the lease. The present plan of the Eastern Steel Company is to supply its own requirements in basic iron from the Warwick furnaces and market the surplus, as well as to continue the manufacture and sale of foundry grades. The stockholders of the Warwick Iron & Steel Company and the Eastern Steel Company will hold special meetings on January 16 and 17, respectively, to take formal action on the proposed lease. There is no doubt of its ratification.

The Southern railroads are not likely to lower freight rates on pig iron.

A Rapid Bridge Repair

Details of a Recently Completed Job on a Chicago Railroad Bridge

A recent and very interesting bridge repair job both from a mechanical standpoint as well as from that of cost was performed on the bridge of the Chicago, Milwaukee & St. Paul Railroad, spanning the north branch of the Chicago River between Division street and North avenue, Chicago, Ill. Another special feature about the work was the exceptionally rapid time in which it was done. Fig. 1 is a view of a portion of the top chord of the bridge while the work was in progress, and Fig. 2 shows a section and an elevation of the arrangement used to clamp the members together at the joint while the repairs were being made.

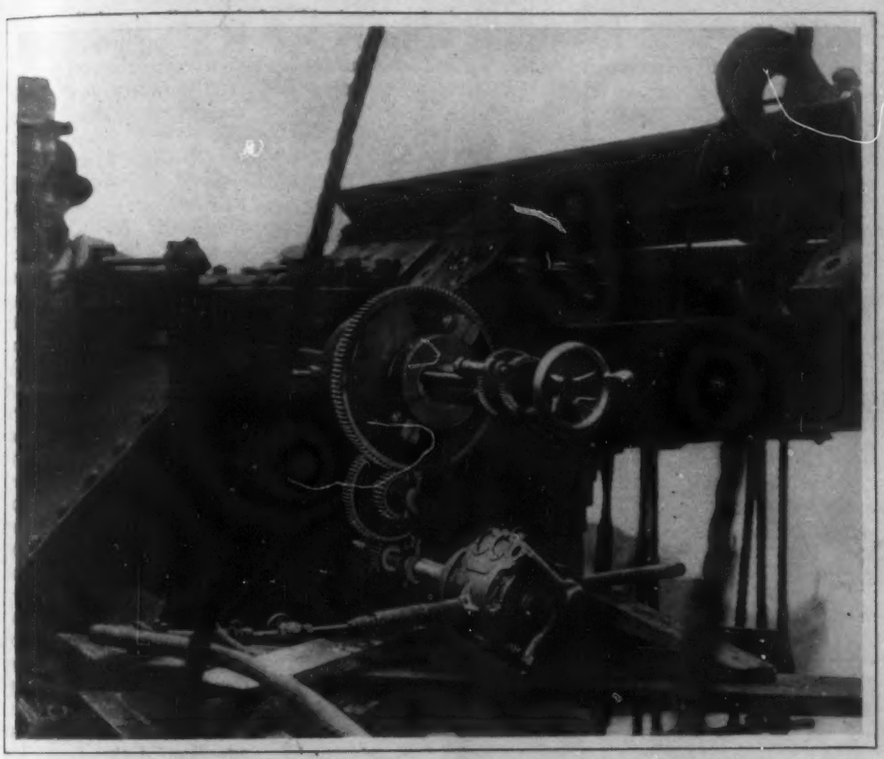

Fig. 1—A Portion of an Exceptionally Rapid Repair Made to a Bridge of the Chicago, Milwaukee & St. Paul Railroad at Chicago, Ill.

The bridge which was repaired was of the through truss swing type and was erected in 1902. This style of bridge had to be used on account of the narrowness of the river and the necessity for keeping an open channel. The structure is 230 ft. long, is pivoted on the north bank and has unequal arms, the longer one extending over the river and being counterbalanced for overhang. As a result of the vibration to which the structure was subjected, the pins and bearings became so worn it was deemed advisable to replace them. While similar repairs had formerly been accomplished by driving piling and erecting false work to support the members which were removed to a shop and rebored, in this case even under the most favorable circumstances work of this character would have obstructed navigation for several days apart from the enormous expense involved. The river traffic at this point is great and trouble was experienced in securing permission from the War Department to shut off navigation. For this reason it was decided to attempt the scheme of boring out the pin holes and replacing the pins with larger ones without removing any of the members.

Before each pin was removed it was necessary to clamp the members at the joint securely in position. The device used for this purpose is shown in Fig. 2. Four steel plates A were used to hold the eye bars and these plates were placed on each side of the bars with a block of wood, C, fitting tightly between the inner two while the two outer ones reinforced the plates B which were directly in contact with the eye bars. The whole was bolted together with 1-in. bolts, this arrangement developing enough friction between the plates to take care of the dead load stress in the eye bars. The two plates B, one on each side, were fastened to the lower flange of the top chord and to each end post by angles and bolts and this supported the hanger by bolts as clearly shown in the section at the left of Fig. 2. In this way when the pins were driven out all the members were rigidly clamped in position.

When the pins were removed it was found that they had become considerably worn and their bearings slightly enlarged. The diameter of these holes was increased from 5 in. to 5¼ in. by using a portable boring bar made by Joseph T. Ryerson & Son, Chicago, Ill. Although designed primarily for shop boring locomotive cylinders, this device gave satisfaction even under these adverse conditions. A view of the work being done is given in Fig. 1. The boring bar was driven directly by a small air drill which operated the shaft and furnished the necessary power. All the power plant that was required was a section car on which a gasoline engine and an air compressor were mounted.

The short time required for doing this work is also a noteworthy feature. The work was begun at 6 a. m. on the morning of November 6 and by 8:15 p. m. of the same day the four pins had been removed, the holes rebored, new pins inserted and traffic was passing over the bridge.

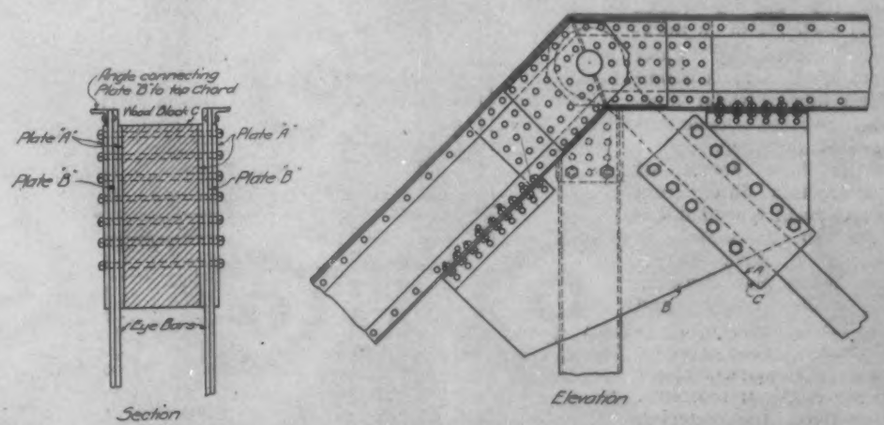

Fig. 2—Details of the Clamping Device Employed to Hold the Bridge Members Together While the Work Was Being Done

West End Furnace at Roanoke, Va., was blown in December 27.

Mechanical and Civil Engineering
PITTSBURGH, PA.

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A Rapid Bridge Repair

Details of a Recently Completed Job on a Chicago Railroad Bridge

A recent and very interesting bridge repair job both from a mechanical standpoint as well as from that of cost was performed on the bridge of the Chicago, Milwaukee & St. Paul Railroad, spanning the north branch of the Chicago River between Division street and North avenue, Chicago, Ill. Another special feature about the work was the exceptionally rapid time in which it was done. Fig. 1 is a view of a portion of the top chord of the bridge while the work was in progress, and Fig. 2 shows a section and an elevation of the arrangement used to clamp the members together at the joint while the repairs were being made.

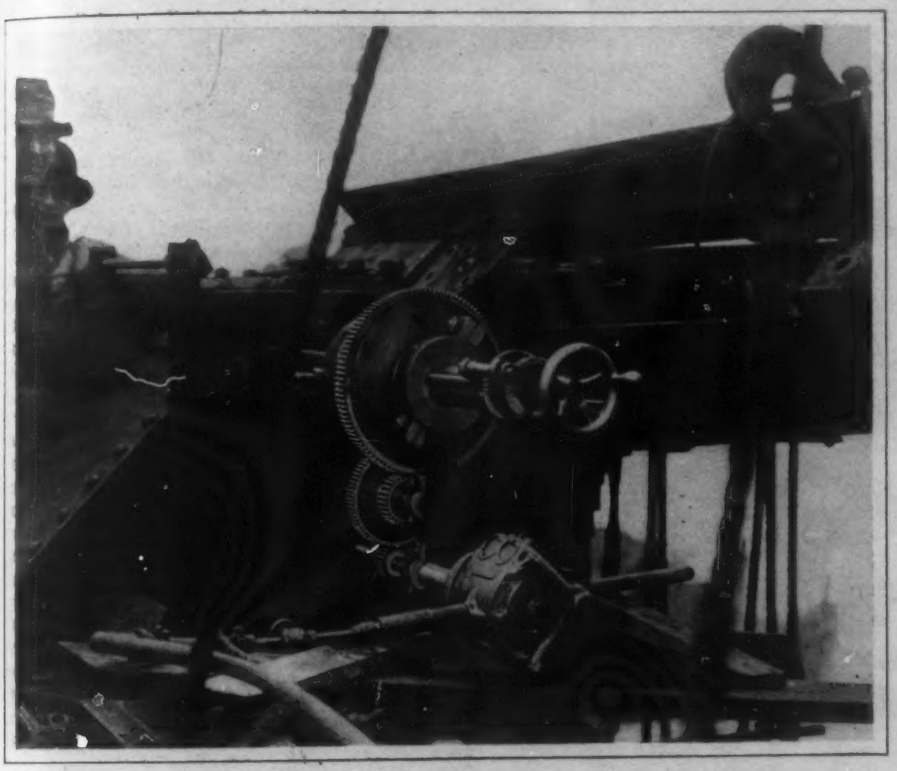


Fig. 1—A Portion of an Exceptionally Rapid Repair Made to a Bridge of the Chicago, Milwaukee & St. Paul Railroad at Chicago, Ill.

The bridge which was repaired was of the through truss swing type and was erected in 1902. This style of bridge had to be used on account of the narrowness of the river and the necessity for keeping an open channel. The structure is 230 ft. long, is pivoted on the north bank and has unequal arms, the longer one extending over the river and being counterbalanced for overhang. As a result of the vibration to which the structure was subjected, the pins and bearings became so worn it was deemed advisable to replace them. While similar repairs had formerly been accomplished by driving piling and erecting false work to support the members which were removed to a shop and rebored, in this case even under the most favorable circumstances work of this character would have obstructed navigation for several days apart from the enormous expense involved. The river traffic at this point is great and trouble was experienced in securing permission from the War Department to shut off navigation. For this reason it was decided to attempt the scheme of boring out the pin holes and replacing the pins with larger ones without removing any of the members.

Before each pin was removed it was necessary to clamp the members at the joint securely in position. The device used for this purpose is shown in Fig. 2. Four steel plates A were used to hold the eye bars and these plates were placed on each side of the bars with a block of wood, C, fitting tightly between the inner two while the two outer ones reinforced the plates B which were directly in contact with the eye bars. The whole was bolted together with 1-in. bolts, this arrangement developing enough friction between the plates to take care of the dead load stress in the eye bars. The two plates B, one on each side, were fastened to the lower flange of the top chord and to each end post by angles and bolts and this supported the hanger by bolts as clearly shown in the section at the left of Fig. 2. In this way when the pins were driven out all the members were rigidly clamped in position.

When the pins were removed it was found that they had become considerably worn and their bearings slightly enlarged. The diameter of these holes was increased from 5 in. to 5¼ in. by using a portable boring bar made by Joseph T. Ryerson & Son, Chicago, Ill. Although designed primarily for shop boring locomotive cylinders, this device gave satisfaction even under these adverse conditions. A view of the work being done is given in Fig. 1. The boring bar was driven directly by a small air drill which operated the shaft and furnished the necessary power. All the power plant that was required was a section car on which a gasoline engine and an air compressor were mounted.

The short time required for doing this work is also a noteworthy feature. The work was begun at 6 a. m. on the morning of November 6 and by 8:15 p. m. of the same day the four pins had been removed, the holes rebored, new pins inserted and traffic was passing over the bridge.

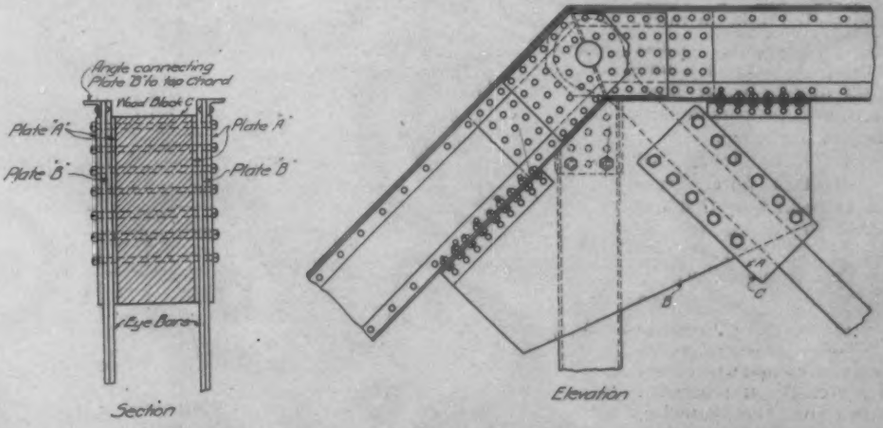


Fig. 2—Details of the Clamping Device Employed to Hold the Bridge Members Together While the Work Was Being Done

West End Furnace at Roanoke, Va., was blown in December 27.

Mechanical and Civil Engineers
PITTSBURGH, PA.

Thin-Lined Blast Furnace Construction

Designs for Controlling Heat Losses Applicable to Both Old and New Furnaces

BY DAVID BAKER, M. E., PHILADELPHIA

The operation of the thin-lined blast furnace in this country has not been so successful as in Germany, where the idea originated, and it seems to the writer that this is due principally to the greater loss of heat resulting from the American construction.

In this country three different forms of construction have been adopted, represented, first, by the furnace in the Isabella group of the Carnegie Steel Company, namely, a rolled plate shell cooled by water troughs or pockets riveted to the shell. This furnace is provided with a 12-in. firebrick lining and there is about an inch of metal between the bricks and the water in the pockets.

At South Chicago, the shell of the first thin-lined furnace consisted of cast-steel segments bolted together. On the outside of this, the cooling was effected by water flowing over the surface. A second furnace was built at South Chicago of rolled plate construction with water pockets attached, much the same as in the Isabella Furnace, except that the water, instead of circulating from one pocket to another, is kept in the pocket and allowed to evaporate, enough water being added to take the place of what is vaporized.

At the plant of the Tennessee Coal, Iron & Railroad Company, Ensley, Ala., the thin-lined furnace recently constructed has a rolled steel shell 1⅛ in. in thickness cooled by water sprays, so there is a uniform film of water flowing down the outside surface of the shell.

All these forms of construction differ from the German type that has been so successful in having a comparatively thin metal plate between the cooling medium and the brick work, while in Germany the furnace shells are constructed of heavy cast-iron segments, cooled on the exterior. The effect of this difference in construction is to materially increase the loss of heat in the American furnace over what is lost in the operation of the German type.

There is another objection to the rolled plate construction of this country where the cooling pockets are riveted to the shell, and that is the danger of leakage, particularly around the rivets or bolts holding the angle irons attached to the inside of the shell, especially where the heads of these rivets or bolts are submerged in the water pockets. In the Ensley construction this danger of leaks from rivets submerged in the water pockets is avoided, but the cooling effect on the whole furnace is greater.

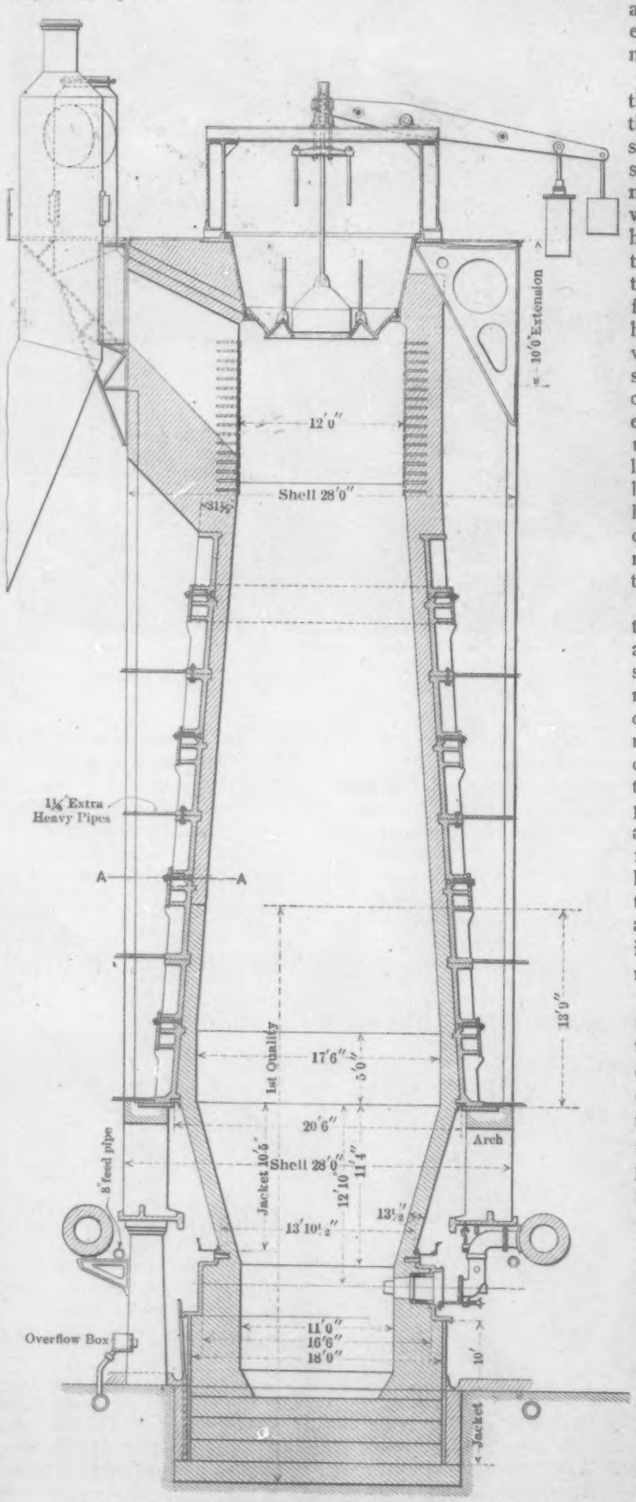


Fig. 1—Thin Lining Applied to Existing Blast Furnace

There is no question in the writer's mind that thin-lined furnace construction has come to stay, but just what thickness and what cooling will give the best results has not been demonstrated conclusively in this country. The old furnaces with their very heavy firebrick walls, were not only very expensive to reline, but, on account of the lack of proper cooling, invited the rapid destruction of the lining by permitting the brickwork, with its very heavy backing of non-conducting material, to reach the temperature of the furnace at that point.

One great obstacle in the way of the general adoption of this new construction to most iron manufacturers is the cost of replacing the old furnace shell with the new construction and the risk that the change may not prove so satisfactory as anticipated. Whenever a furnace is built for a thin lining, it must be practically rebuilt to return to a comparatively thick lining, if the venture does not prove a success.

What is needed, therefore, is some construction that will permit the owner of one stack to change from a thick to a thin lining without reconstructing the shell, or to permit him to reduce the thickness of the lining in stages as the furnace is relined for each blast, if he wishes to do it in that way. In addition, some cooling should be provided for the thin-lined furnace that can be controlled as to the amount of heat removed.

The Ladd & Baker improved thin-lined furnace construction, recently patented, provides a

means of securing the advantages of thin-lined construction with controllable cooling that may be applied to an old furnace shell as well as to a new one. In Fig. 1 is shown a section of an old furnace arranged for a thin lining. Vertical cast-iron water-cooled staves are provided. These staves are constructed in sections, the first row resting on the mantel and the thrust of the stock and the firebrick lining is taken by a band which girts each section. With this arrangement not only may a thin lining of any thickness be arranged for with an old shell, but the thin lining may be used for only the lower part of the inwall, if it is so desired.

Fig. 2 shows the front view and a section of the cooling staves, the dotted lines showing how the cooling pipe is cast in each segment. With this construction, it can readily be seen that the amount of water circulated is under the control of the management and may be run very hot or cold as desired. This permits the cutting down of the amount of heat lost and of measuring the number of heat units carried away in this system of cooling with great accuracy.

Fig. 3 shows this improved construction applied to a new furnace shell. In this case the thrust of the stock and the lining is borne by the shell. In both applications of this thin-lined construction the space back of the cooling staves is filled with loom or granulated slag.

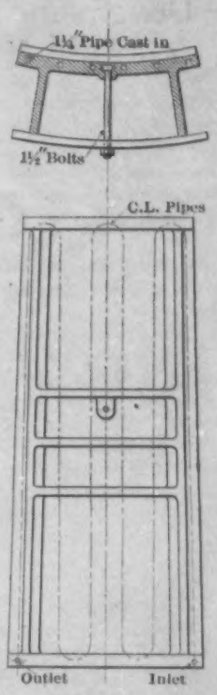


Fig. 2—One of the Water Cooled Staves or Plates

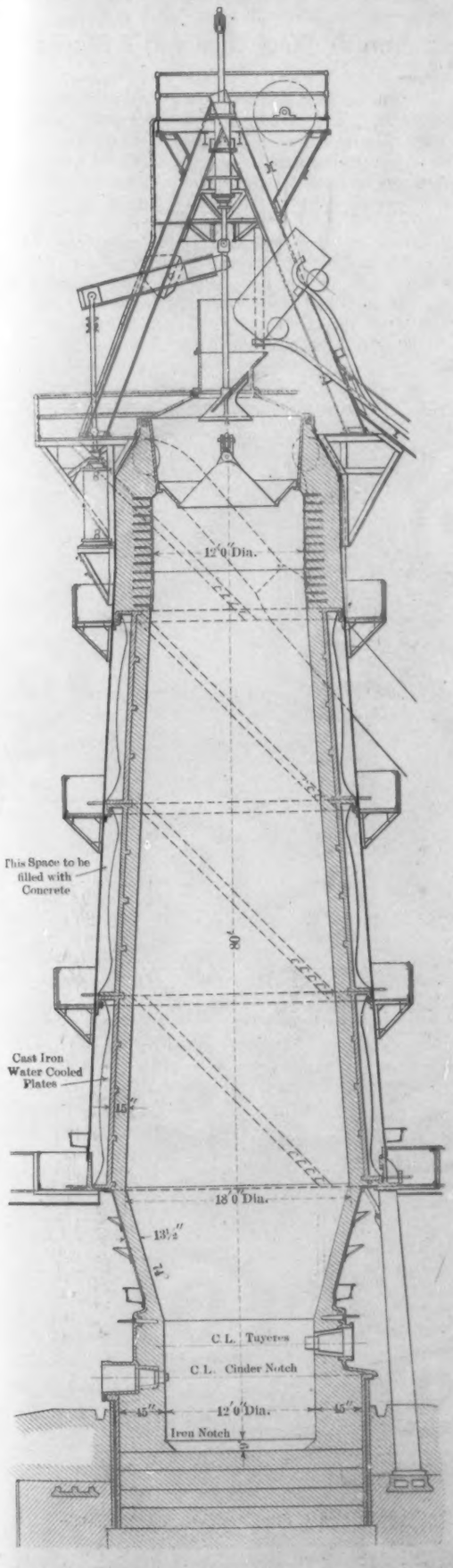


Fig. 3—Design of Thin Lining for the Blast Furnace

Philadelphia Metal Manufacturers' Association

The Metal Manufacturers' Association of Philadelphia held its annual meeting at the Bellevue-Stratford, December 13. The officers elected for the ensuing year are as follows: President, E. L. Langworthy, Adams & Westlake Company; vice-president, J. H. Schwacke, Wm. Sellers & Company, Inc.; treasurer, Thomas Evans, Eynon-Evans Mfg. Company. Councillors, to serve two years, Robert Biddle, John L. Gaumer Company; C. Willis Adams, Link-Belt Company, and George R. Allen. Henry Morgan is secretary. The recommendations of the president, concerning the appointment of five members to serve as a permanent membership and reception committee, and three members to serve as a committee on apprentices, were adopted. The S. J. Creswell Iron Works was elected to membership. A total of 14 new members was elected during the year, a record equaled only in 1905, when business activity resulted in a strong demand for skilled labor, and manufacturers were brought to a realization of the need of protection and assistance which a membership in the association afforded.

A By-Product Coke Plant for Atikokan Furnace

Announcement is made that the Atikokan Iron Company, Port Arthur, Ont., is to increase the capacity of its furnace and install by-product coke ovens, with the intention of furnishing gas at a reasonable rate to the cities of Port Arthur and Ft. William. The system will be identical with that of the Zenith Furnace Company at Duluth. With the alterations completed, the capacity of the stack will be approximately 200 tons of pig iron daily. The coke ovens at present operated in connection with the furnace are of the beehive type. Port Arthur and Ft. William have a combined population of nearly 40,000, and it is believed they will furnish a market for all the gas that can be produced. The iron ore used at Port Arthur is from the company's own mine in the Atikokan range, Ontario, at which 120 men are now employed.

The Pacific Coast Steel Company announces that its new open-hearth steel plant at South San Francisco, Cal., is now ready for work, and will commence active operations the first of the year.

The No. 4 Blast Furnace at Haselton, Ohio

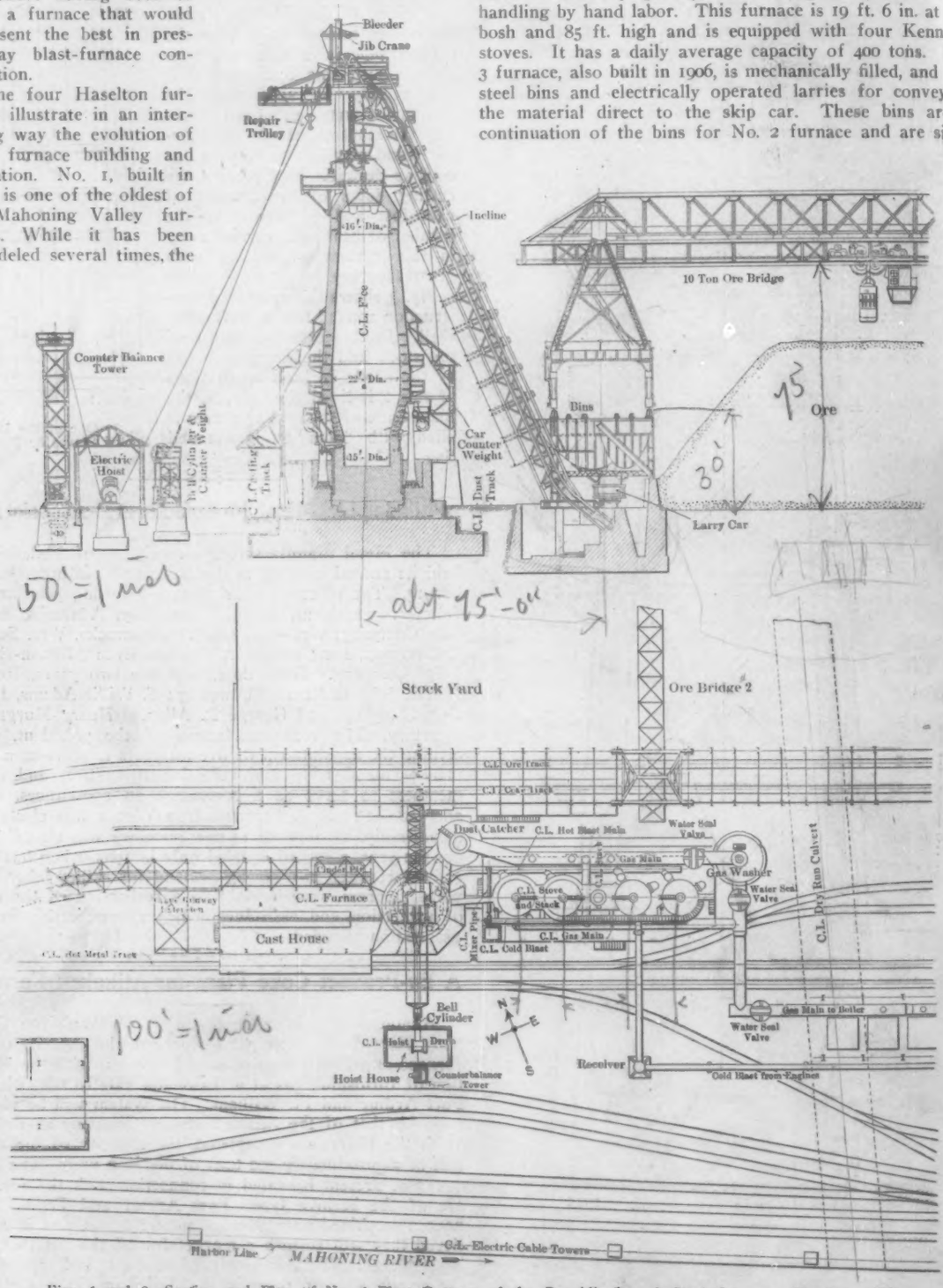
Largest and Best Equipped of the Republic Iron & Steel Company's Stacks

The new 500-ton blast furnace of the Republic Iron & Steel Company, which was blown in June 9, 1911, is the fourth and largest in the group of this company's furnaces at its Haselton, Ohio, plant. It is also the most complete in every detail of construction and equipment, the effort having been to build a furnace that would represent the best in present-day blast-furnace construction.

The four Haselton furnaces illustrate in an interesting way the evolution of blast furnace building and operation. No. 1, built in 1867, is one of the oldest of the Mahoning Valley furnaces. While it has been remodeled several times, the last time being in 1896, it is still strictly typical of the old-fashioned hand-filled furnaces. It has a bosh diameter of 16 ft. 9¾ in. and is 74 ft. 5¼ in. high. There are four Cowper-Kennedy stoves, to which a fifth is now being added. The daily average capacity is 300 tons.

No. 2 furnace was built in 1906; and while it is a hand-filled furnace it is modern in many respects, having steel bins for the receipt of all material. These bins are supplied direct from railroad cars and by a traveling ore bridge, the material for the furnace being delivered to the hand barrows by gravity, thus doing away with any handling by hand labor. This furnace is 19 ft. 6 in. at the bosh and 85 ft. high and is equipped with four Kennedy stoves. It has a daily average capacity of 400 tons. No. 3 furnace, also built in 1906, is mechanically filled, and has steel bins and electrically operated larries for conveying the material direct to the skip car. These bins are a continuation of the bins for No. 2 furnace and are similarly fed direct from railroad cars and by an ore bridge This furnace has a 20-ft. 6-in. bosh, is 85 ft. high and is equipped with four Kennedy stoves. It has a daily average capacity of 400 tons.

No. 4 furnace embodies all that is modern in blast fur-



Figs. 1 and 2—Section and Plan of No. 4 Blast Furnace of the Republic Iron & Steel Company, Haselton, Ohio

nace practice. It is, of course, a mechanically filled furnace, having a single skip hoist, but so arranged that two skip buckets are used, one being in position for being filled while the other is being hoisted. These buckets rest on cars in the skip pit at the bottom of the incline, the cars being arranged to travel back and forth on a semicircular track. Provision is made for rotating the buckets on these cars in order to overcome any irregularity in the distribution of the stock.

The overhead bin system is a continuation of that for Nos. 2 and 3 furnaces, the ore and limestone being conveyed to the skip buckets in larry cars, while the coke

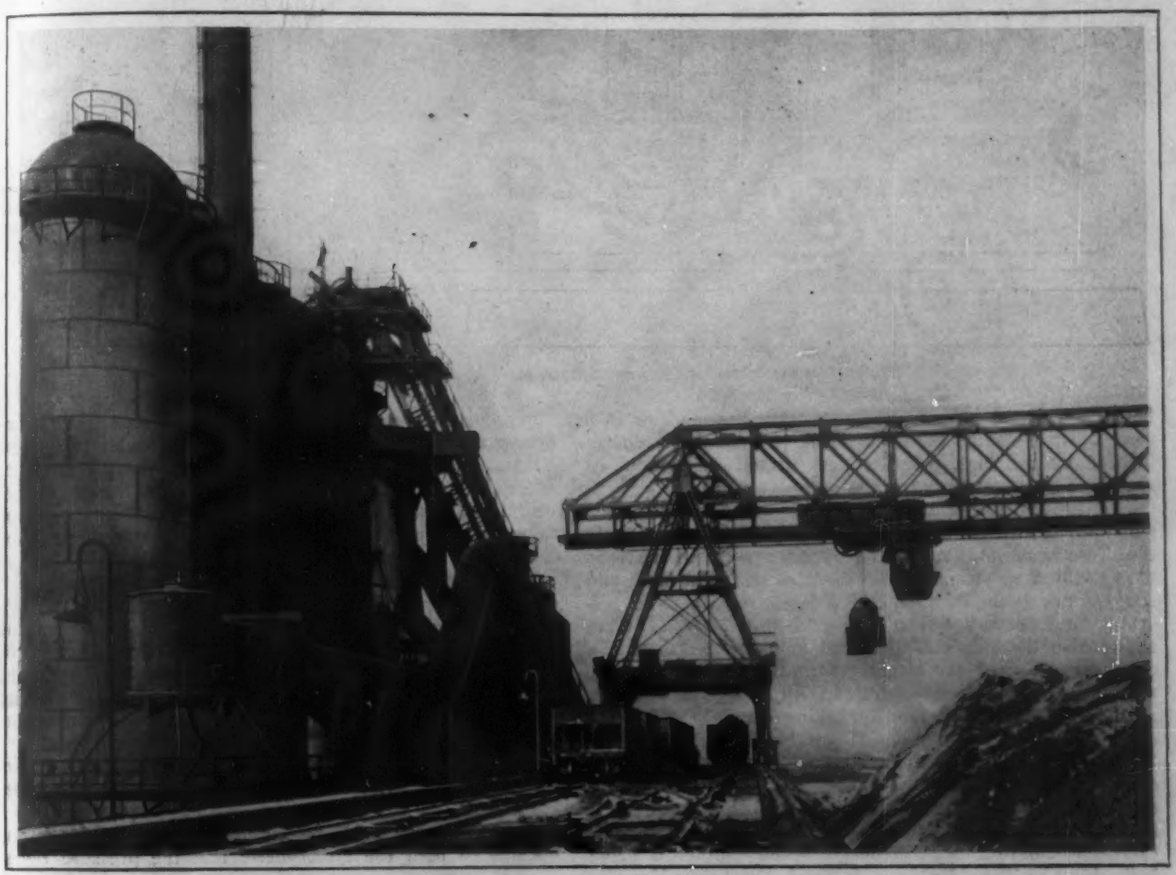


Fig. 3—View Showing Charging Side of New No. 4 Furnace

is discharged direct from overhead bins into the skip buckets. The furnace is of very heavy construction, the shell being 1 in. thick, with all the other details in proportion. There is a Kennedy tight top with four openings leading into two downcomers, one large dust catcher, and one Mullen gas washer, through which all of the gases pass before going to the stoves and boilers. The furnace has a 22-ft. bosh, is 90 ft. high and has a daily average capacity of 500 tons.

The boilers, engines and pumps for all of the furnaces are respectively in groups, so arranged that either furnace can be served by any or all of the auxiliary machinery. By means of the company's own railroad facilities hot metal can be delivered to both the Bessemer and open-hearth departments.

To Drain an Arkansas Swamp.—One of the most gigantic drainage projects ever undertaken in the South has been announced by the Morgan Engineering Company, Memphis, Tenn. It involves sunken lands in northeastern Arkansas, supposed to have been caused by earthquake about 100 years ago. About 300 square miles are included in the district, almost 200,000 acres. The contract, which will be let January 25, calls for the construction of 300 miles of ditches, 280 miles of which will be 40 to 50 ft. wide and 10 to 15 ft. deep. The main ditch will be 55 miles long. The surplus water will be led into the St. Francis and Tyronza rivers. The reclamation will cost about $1,500,000.

Lake Shipbuilding in 1911

The shipbuilding industry on the Great Lakes has been at a low ebb during the year now closing. In 1910 the Lake shipyards had a busy year, and large additions were made to the total vessel tonnage. In spite of the heavy ore movement in 1910, the carrying capacity of Lake vessels was greater than the demand and many of the freighters remained at port for a considerable part of the season. A halt was therefore called in the production of new boats. In the past year the American shipyards on the Great Lakes turned out only 24 vessels as compared with 51 launched in 1910. Of those built this year, only 5 were bulk freighters, as compared with 20 freight boats built in 1910. Lake yards this year built 6 steamers for the package freight trade on the Atlantic coast. Five large barges were turned out for the Standard Oil Company. Among the remainder of the 24 were several fishing tugs. Sixteen of the 24 ships were built at the yards of the American Shipbuilding Company.

The number of boats built by the Great Lakes shipbuilders, exclusive of the Canadian yards, each year for the past 10 years were as follows:

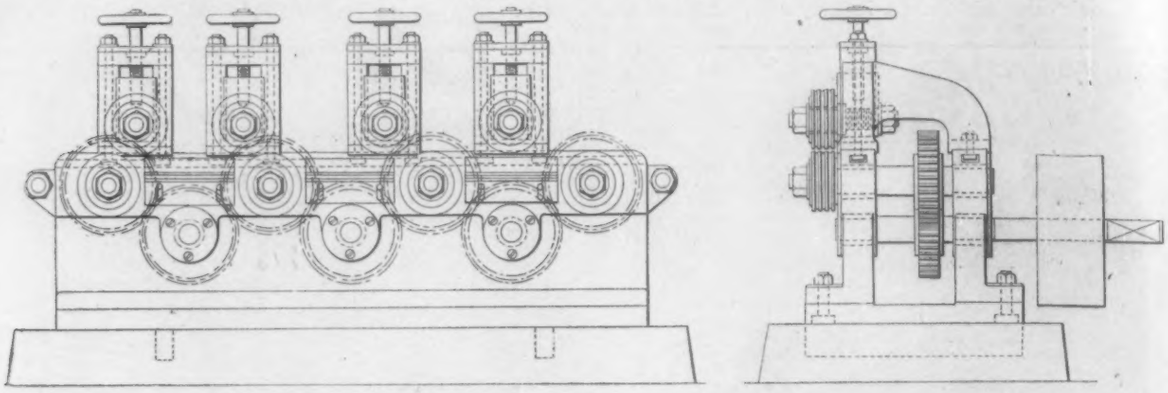
Years.	Bulk freighters.	Other vessels.	Total.
1911	5	19	24
1910	20	31	51
1909	17	22	39
1908	24	15	39
1907	40	16	56
1906	40	7	47
1905	29	3	32
1904	7	6	13
1903	45	5	50
1902	32	10	42

The Kerr Turbine Company, Wellsville, N. Y., announces the appointment of the following new agents: St. Louis, Walter L. Flower, 312 S. Eighth street; New Orleans, C. E. Grevemberg, 1023 Maison Blanche Building.

The S. K. F. Ball Bearing Company, 50 Church street, New York, has opened an office in Chicago to facilitate the handling of Western business. The new office will be in 1505 Heisen Building, and in charge of C. A. Winn.

The Pittsburgh Universal Straightener

The Schlieper-Daae Company, engineer, Ferguson Building, Pittsburgh, has recently put on the market what is known as the Pittsburgh universal straightener for straightening flats, angles, tees, channels and shapes. The method formerly used in straightening these products was to have the opposing rolls as close together as possible to take all the short kinks out of the material, and by doing this the variations in rolling and stiffness in the bars were found to cause them to leave the machine in a sweep. At the same time the finish, it is emphasized, was injured by the high pressure necessitated on account of the short distances between the opposing rolls.



Elevations of the Machine for Straightening Flats and Shapes, Made by the Schlieper-Daae Company, Pittsburgh

In the Pittsburgh universal straightener the opposing rolls are adjustable in longitudinal direction as shown in the cross section, allowing the operator to place the rolls in a position to straighten the bars of different sizes and shapes. For example, a bar 2½ x ½ in. requires a considerably longer leverage than a ¾ x ¼-in. flat bar. The cut shows also the side elevation and indicates the simplicity of construction of the straightener. It is stated that the machine, when properly operated, will straighten flat bars or other sections continuously, taking care of 1/16 in. in rolling without readjusting of machine or injuring the finished appearance of the material. The machine can be driven by electric or belt power, and, it is said, will straighten 10,000 lb. per hour. One of these machines is in operation in the plant of the Jones & Laughlin Steel Company, South Side, Pittsburgh, while another is being built for the Republic Iron & Steel Company, Youngstown, Ohio.

The American Engineering Company has been formed at Philadelphia, Pa., to take over the property and business of the Williamson Brothers Company, Philadelphia, and the American Ship Windlass Company and Taylor Stoker Company, formerly of Providence, R. I. The first steps in this consolidation were taken when in 1906 the Williamson Brothers Company purchased control of the American Ship Windlass Company. In addition to the manufacture of steering engines the company builds hoisting machinery of all kinds. This includes not only ship auxiliary machinery, such as deck winches, coal handling machinery, etc., but also contractors' hoists and other machines of similar nature. The Taylor stoker, invented by the late E. E. Taylor, will hereafter be built at Philadelphia, where the American Engineering Company has a large plant, comprising a foundry and machine shops.

The St. Louis Machine Tool Company, 1209-1211 Gratiot street, St. Louis, Mo., has sold both its Coe drill and St. Louis drill patterns to the Perry Machine Tool Company, Perry, Mich., and will now devote all its time and attention to the developing of its grinding and tapping machines, with the aim of making them the most complete lines of their class of machinery on the market. The Perry Machine Tool Company is composed of H. G. Porter and associates. Mr. Porter is a mechanic of great ability, who will develop the drill business as the St. Louis Machine Tool Company could not with its other lines.

The Lea Recorder

A Recently Developed Instrument for Measuring Boiler Feed

To enable accurate and continuous measurement of the flow of water and other liquids to be secured the Yarnall-Waring Company, 1109 Locust street, Philadelphia, Pa., has developed a new type of Lea recorder. This device is applicable to the measurement of boiler feed water, condenser and pump discharges; the flow of water in springs, irrigation ditches and canals; as well as the measurement of sewage, acids and other liquids. Among the advantages claimed for the recorder are accuracy at different rates of flow, compensation for temperature changes, absence of mechanism in contact with the water and the abllity to use the same instrument in measuring both large and small quantities of liquids. The recorder operates on the V-notch principle and gives a graphic record of the rate of flow by using a recording pen which moving in direct proportion to the rate of flow traces a diagram having an area that is a measure of the total quantity of water passing through the recorder. Two types of recorder are made, namely, the atmospheric and the pressure styles which are illustrated in Figs. 1 and 2, respectively. The line drawing, Fig. 3, comprises a plan view and front and end elevations.

The following brief description of the recorder is applicable to both the atmospheric and the pressure types.

Fig. 1—The Atmospheric Type of Lea Recorder Manufactured by the Yarnall-Waring Company, Philadelphia, Pa.

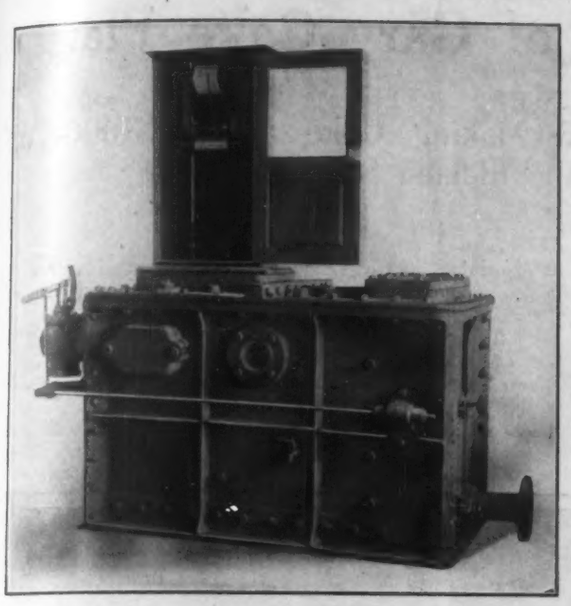


Fig. 2—The Pressure Type

A float spindle having a rack cut upon it passes through the bottom of the instrument case. This float spindle which can be seen at the left of the upper portion of Fig. 2 connects with a drum shown at about the center of the same portion of this engraving by a small pinion mounted upon the drum axis. This drum revolves between centers and upon its body is a modified helix, the pitch of which is the curve of flow of the V notch used in the recorder. The pitch of this helix increases in the same proportion that the flow through the notch increases with the depth. A horizontal slider bar supported on small pivoted rollers is mounted above this drum and carries an arm. There is a pen or pencil point at the upper end of this arm making contact with a paper chart mounted upon a clock-driven recording drum which makes one complete revolution in 24 hr. The spiral on the drum is rotated as the float in the recorder rises or falls and this motion is imparted to the recording mechanism by the saddle arm projecting from the slider bar and engaging with the screw thread at its lower end. Adjacent to the screw thread on the body of the spiral drum is a graduated scale, the divisions of which read in pounds per hour. A double purpose is served by the spiral drum as the screw thread rectifies the motion of the pen and causes it to move equal distances for equal increments in the rate of flow, while at the same time it provides a magnified scale for making accurate observations of the rate of flow at any moment.

The atmospheric type of recorder illustrated in Fig. 1 operates by having air pressure on the upper side of the water flowing through the recorder, while the pressure type shown in Fig. 2 is operated by the pressure of water in the system. As will be noticed the latter type of recorder has a tank made of cast iron similar to the standard open heater construction. This construction, it is pointed out, enables the recorder to be placed between the open feed water heater and the feed pump, and as the pressure in the recorder is the same as that in the heater, there is no loss of temperature in the feed water during its passage from the heater to the pump. As the recorder will stand any pressure or vacuum up to 10 lb. and the operating head is only 18 in. the device can be installed without any extensive changes in the piping. It will be noticed from Fig. 2 that a balanced float valve is placed on the inlet at the left end of the tank. This is operated by a float and lever mechanism placed below the weir on the discharge side, an arrangement which it is emphasized makes it practically impossible to flood the weir or the recorder. At the opposite or right end of the tank the water gauge is located so that the operation of the pump mechanism can be checked at all times. Two glass peep holes located at the sides of the tank provide means of adjusting the recorder to zero while the notch tank is under pressure. This pressure recorder is made in sizes varying from 200 to 10,000 boiler horsepower.

When the flow to be measured is so small that it would show only a depth of but 1 or 2 in. in a 90-deg. V notch, other notches having smaller angles can be employed. As the flow through these notches is approximately proportional to their width for a given depth it is possible to obtain a large float movement while only a small quantity of water is being measured and thus reduce any errors due to incorrect setting of the instrument to a minimum. Another method of measurement is to supply one recorder with a series of multiple V notches for measuring large and small quantities. When this is done any number of notches can be used, the spiral drum having a capacity equal to the maximum flow through one notch. Different numbers of notches are opened according to the amount of flow to secure a practically uniform movement of the float.

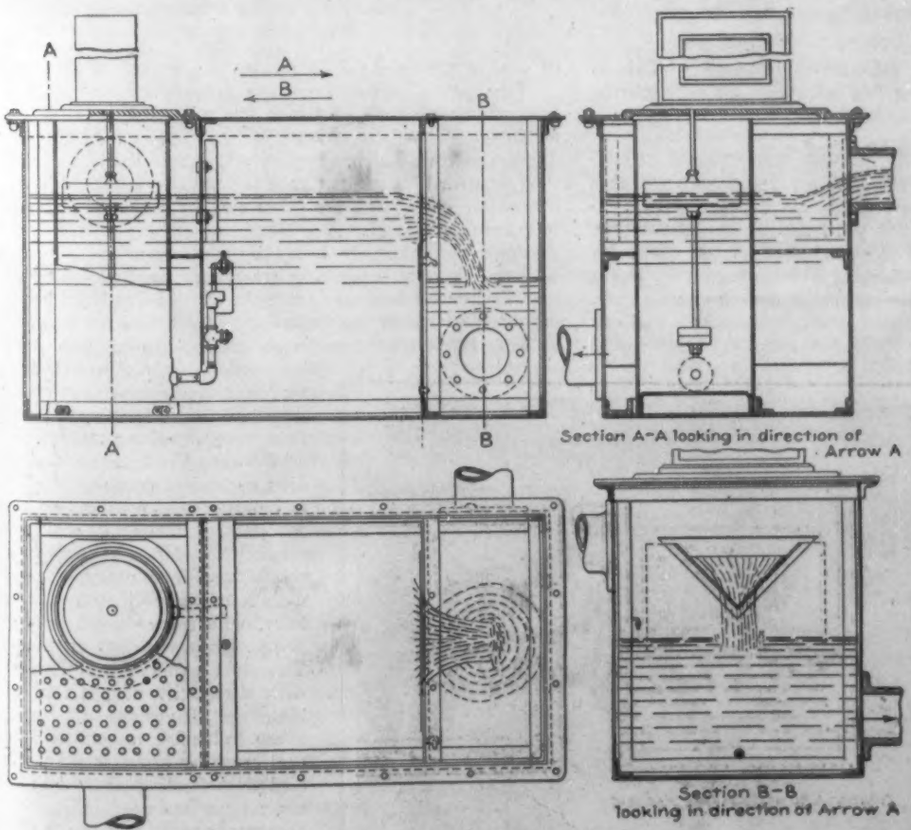


Fig. 3—View Showing Details of the Recorder's Construction

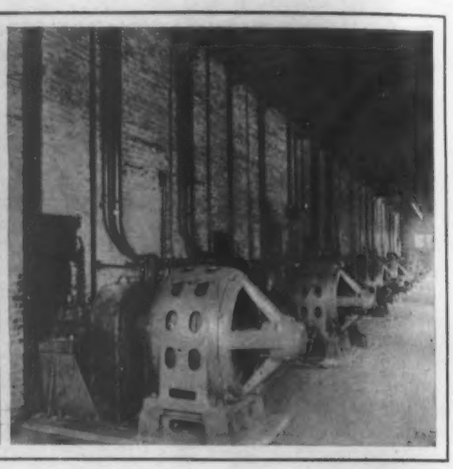
These recorders are said to produce records which are accurate within 1½ per cent. by weight and in addition they are also guaranteed by the maker to have an average error of not more than ½ per cent., due to variations in temperature over a range of 25 deg. on either side of the normal operating figure.

Electrical Equipment of Gary Coke Plant

Apparatus for Handling Coal and Making Coke at the 8000-Ton By-Product Coke Plant of the Indiana Steel Company

The largest and best equipped coal handling and by-product coke-making plant in the world is at Gary, Ind. It is of special interest because it is electrically operated throughout by motors receiving their current from the gas power plant of the Indiana Steel Company. Another claim to distinction lies in the fact that the 560 Koppers' regenerative by-product coke ovens have a total coke capacity of 8000 tons per 24 hr., and the Koppers' modern direct process for recovering ammonia from the gas in the form of ammonium sulphate is employed. This is the first coke oven plant in this country installed with the direct process for ammonia recovery.

Conveyors Between Breakers and Hammer Mills



The 250-hp. Motors Driving Hammer Mills

Coal Handling

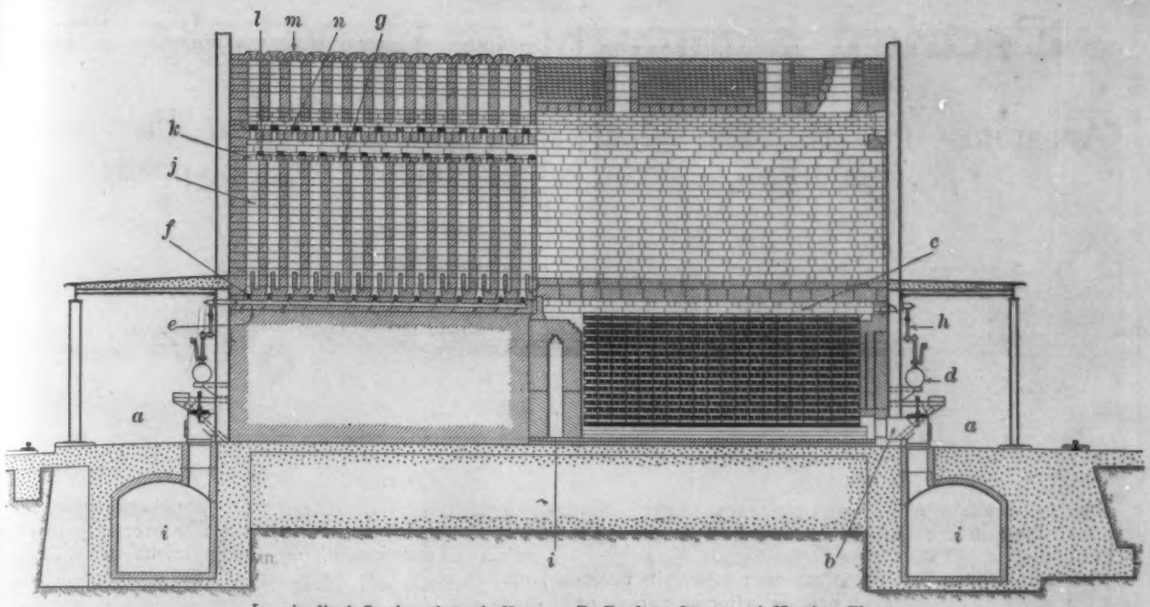
Coal for coke making is dumped from railroad cars into a concrete storage yard which has a capacity of 350,000 tons. The walls of this yard are inclined under the railroad tracks to deflect the coal away from the sides of the yard so the grab buckets of two large Wellman-Seaver-Morgan coal bridges can reach it with greater ease. The bridges are each equipped with 7-ton buckets and can load twenty 50-ton larry cars per hour. Their closing and opening lines and trolley travel are each operated by a 150-hp. motor and the two bridge trucks are operated by eight 30-hp. motors of the same type.

After being loaded into a transfer car the coal is dumped into one of twelve hoppers at the unloading house. These hoppers are each equipped with a shaker distributer driven by a 15-hp., 3-phase, squirrel-cage induction motor. Each of the shakers can evenly distribute 40 tons of coal per hour on the belt conveyors. A continuous supply of coal is assured by keeping one hopper full at all times.

The coal is carried from the unloading house by four belt conveyors, each of which has a capacity of 500 tons an hour. They are driven by four 30-hp., 3-phase induction motors which, together with those used to operate the Bradford breakers, hammer mill crushers and intermediate conveyors, are controlled by a special electrical interlocking system. The stopping of any conveyor or machine automatically holds up all operations prior to its own, thereby preventing waste or jamming. The unloading house conveyors carry the coal to Bradford breakers, each of which has a capacity of 500 tons an hour. It is here broken to 1-in. mesh and separated from what little slate, stone, wood, iron, etc., it may contain. Power for this operation is furnished by four 75-hp., 3-phase motors.

Larry Car Receiving Crushed Coal from Bins and Delivering into Ovens Through Holes on Oven Top.

Between the breakers and the next operation, crushing the coal in hammer mill crushers so that 85 per cent. of it will pass through a No. 64 wire-mesh screen, are four conveyors each with a capacity of 500 tons an hour, which are driven by four 30-hp., 3-phase induction motors. The eight hammer mill crushers with a capacity of 350 tons per hour are driven by 250-hp., 3-phase induction motors. As the coal crushing house is thick with coal dust floating around in the air, all motors used in it are in a separate room built on the side of the house. In many other cases, however, conveyor motors, located near conveyors in other buildings, are showered with coal dust. Crushed coal is



Longitudinal Section through Koppers By-Product Ovens and Heating Flues

carried from the crusher house to the mixer building by two conveyors, each of which has a capacity of 500 tons an hour. They are 120 ft. long, travel 580 ft. per min. and are housed over to insure protection against the elements.

In the mixer house are two 500-ton mixers run by two 15-hp. induction motors with automatic control. The unloading, breaking and crushing machinery and the mixer are connected by an electric-signal system which indicates by electrically operated air whistles any change in character or mixture of coal being sent through. The mixer building has a storage capacity of 2000 tons of pulverized coal. In it 80 per cent. Pocahontas and 20 per cent. Ronco coal are mixed, which gives a coke yield of 84 per cent. of coal charged.

From the mixer house six 500-ton conveyors carry the crushed coal to four cylindrical storage bins over the coke-oven batteries. These four bins have a capacity of 2100 tons each, and the six conveyors will completely fill them every ten hours. Conveyors are driven by two 100-hp., two 75-hp. and two 30-hp., 3-phase induction motors. It is unnecessary to run the coal handling plant at night due to its capacity and that of the storage bins.

Coke Making

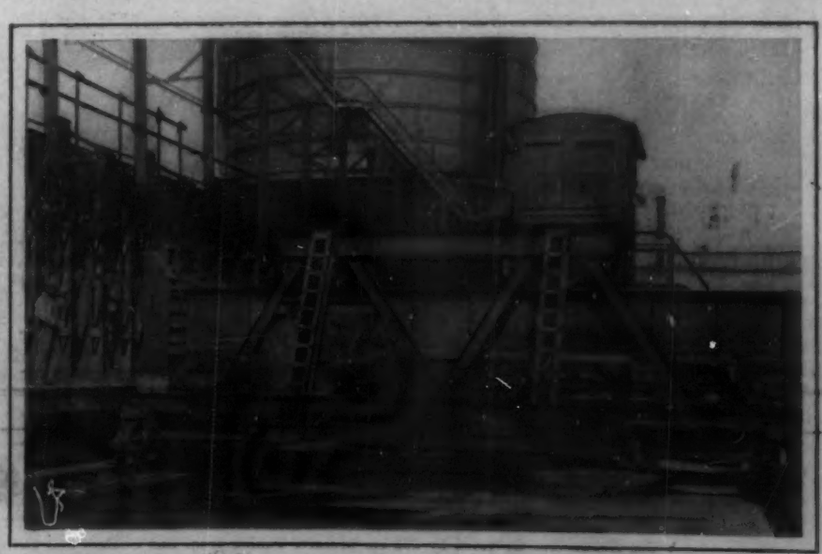
Larry cars run under the storage bins and over the tops of the coke ovens into each of which they charge 12¾ tons of coal. The coal is then levelled by a traveling leveller which is operated by four 30-hp. motors. The charging is done in a certain sequence which enables them to always have ovens ready for pushing, thus assuring continuous operation of men and equipment. The ovens are charged by larry cars, coal being dropped into ovens through the charging holes on top. Coking requires 18 hr., (5920 tons of coal will be coked in 24 hr., when the entire plant is complete) giving 8000 tons of coke per day.

The advantages of the type of oven selected for the Gary plant are interesting. The ovens are heated with gas evolved from the coal carbonized. The coal yields from 50 to 60 per cent. more gas than the quantity necessary for its carbonization, and in the old beehive process of coking the equivalent surplus gas is wasted. A further advantage is that it is not necessary that the gas be consumed on the spot directly it is produced, because it can be conveyed to a desired point and stored for consumption in the working hours of the day.

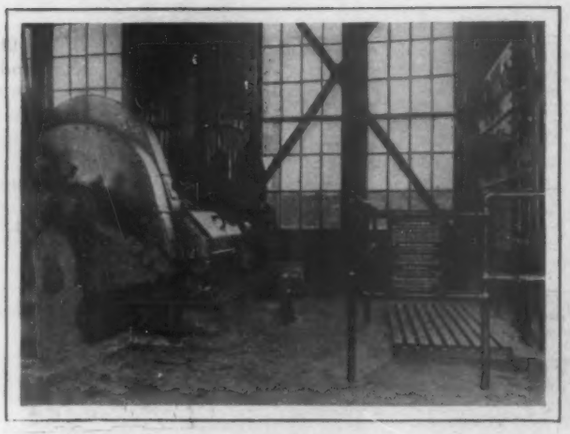
Regenerators also serve as a store for heat by means of which a whole battery of ovens can be shut down entirely for a week or so and started again without heating up being necessary. The regenerators also enable the ovens to be worked, it is explained, at less than one-quarter of their capacity without going cold.

The oven chambers are approximately 39 ft. long, 9 ft. 10¾ in. high, and from 17 to 21 in. wide and have doors at each end operated by a traveling-door machine on the coke discharge side and a door machine attached to the coke pusher, at the other side. The top of the oven is provided with openings for charging the coal and an opening through which the gases of distillation are drawn off to the condensing plant.

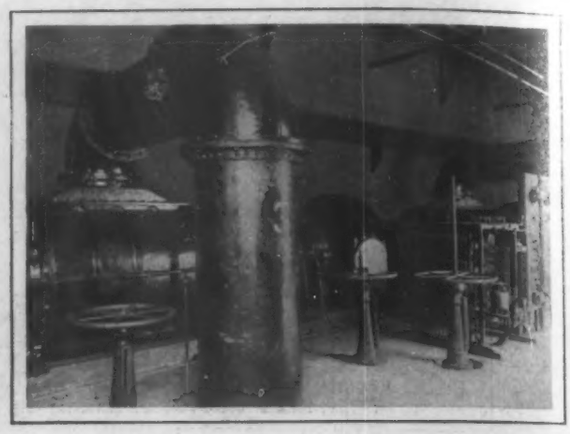
The air for combustion flows along the passage ways, *a*, at the front and back of the ovens, and thence it passes into the regenerators through inlets *b*. In the regenerators the temperature of the air rises to 1200 deg. C. (2190 deg. Fahr.). The highly heated air passes out of the regenerators into the vertical heating flues through the openings *c*. The gas from the by-product plant, freed from tar and ammonia is returned to the ovens by the mains *d*, running along the whole length of the ovens on each side. Branch supply pipes *h* conduct the gas into the gas-distributing channels *e*, which are situated directly beneath the oven walls; thence it passes through the gas nozzles *f* into each vertical flue, where it ignites with the hot air entering through the passage *c*, previously referred to. A jet is, therefore, formed on a level with



Motor-Operated Traveling Crane Coke Pusher at the Plant of the Indiana Steel Company, Gary, Ind.



Motors and Equipment Operating Hoists for Quenching Coke



Centrifugal Pumps in Pump House Driven by 1300-hp. Motors

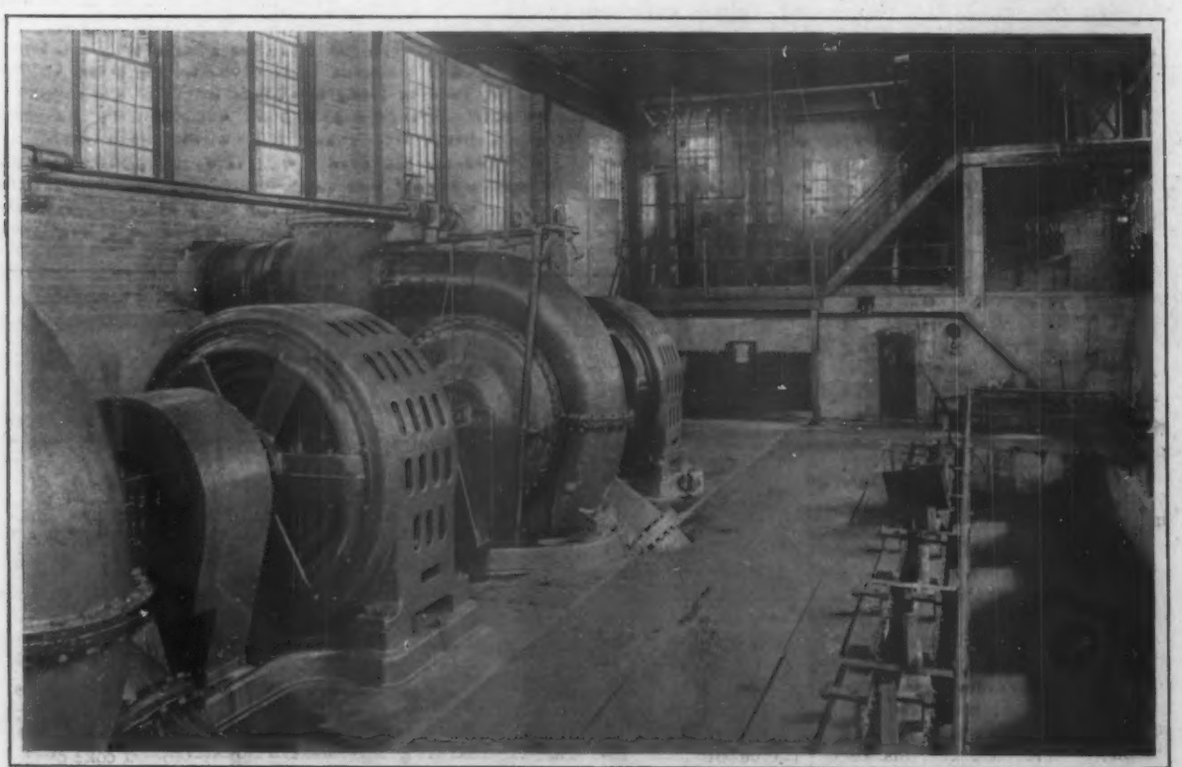
the over floor in each of the heating flues in the oven walls.

The employment of regenerators renders it necessary to reverse the heating process after a period of time, usually about 30 min. This is done automatically by a motor-operated dial-switch system which controls the gas and air valves. The system of heating flues is divided into two sections, so that combustion can take place alternately in each half of the oven wall. When the gas is burning in the flue in one-half of the length of the wall, the products of combustion pass up the flues and enter the top horizontal flue *g*, whence they make their way down the flues in the other half of the oven wall, and enter the regenerator through the same passages *e*, by which the air is admitted to the flues when the direction of combustion is reversed. On issuing from the regenerator the waste gases pass into the flue leading to the chimney *i*, after having given up their heat to the checkerwork of firebrick.

The products of combustion of the gas and air pass up the heating flues *j*, and through the openings *k* at the top of each flue. These openings are furnished with dampers *l*, which can be easily regulated, together with dampers in regenerating passages, so as to enable the exact amount of air to enter the flue necessary to effect perfect combustion. The sliding bricks are accessible from the top of the ovens through the openings *m* and *n*, which are fitted with easily removable plugs.

At this point particular attention should be directed to the sliding bricks and to the openings at the top of the ovens which give access to them, as these are two of the principal features of these ovens. The openings at the top of the ovens serve not only to provide means for regulating the dampers, but serve more particularly to give access to the gas nozzles *f* and they further permit of the flues being inspected at any time. The gas nozzles are furnished with oval orifices to allow them to be taken out by a rod having a tee end. The orifices in the nozzles vary in size, according to their position in the flues. The removal and replacing of a nozzle can be effected in a few minutes. It happens from time to time in all ovens that dark places appear in the oven walls, indicating that the combustion is defective. By means of the openings over each flue in the Koppers ovens, the cause of any irregularity in the heating can be detected.

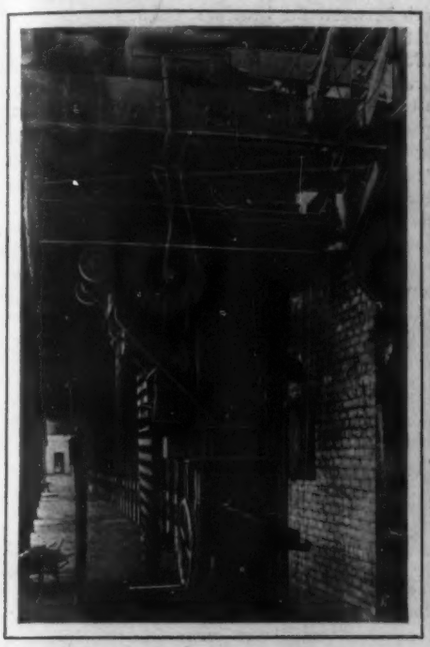
It will have been seen that each oven wall is formed of about thirty vertical flues, and that each of these flues is provided with a heating jet, and also with means for



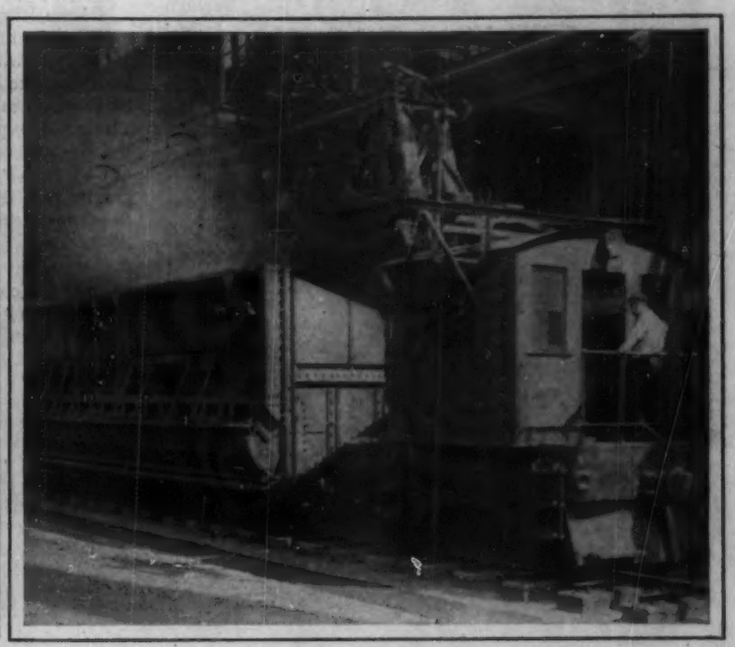
Gas Exhausters Operated by 250-hp. Motors, Taking from Gas Coolers and Delivering to Tar Extractors

regulating the admission of the gas and air, namely, by substituting the gas nozzles, and by adjusting the sliding bricks over each flue respectively. It is, therefore, emphasized that it is easily possible to control the heating so that the oven walls will be subjected to exactly the same temperature from end to end, and thus allow for the production of a coke homogeneous throughout the charge.

When coking is complete and the gas is fully given off, the doors are removed and the charge is pushed out by the traveling ram which is operated by two 50-hp. and one 7-hp. (on door opener) motors. While being pushed the coke is partly quenched by water sprinklers as it falls into a steel and cast-iron car to which is attached a 3-phase General Electric locomotive equipped with two 50-hp. motors. As soon as a charge is entirely in the car it is rushed to the shower hood where quenching is completed.



Motor-Driven Door Coke Extractor on Discharge Side of Ovens



Locomotive and Car on Discharge Side of Ovens; Partial Quenching Takes Place Here

The coke is then elevated to storage bins by two automatically controlled 30-hp., 3-phase motors, which operate elevators. In the final process the coke is run through screens operated by two 30-hp. motors of the same type. Each two batteries of coke ovens are equipped with grinding pans and clay elevators for preparing luting material for the oven doors. These are operated by 15-hp., 3-phase induction motors.

The gases from the ovens go through divided water-sealed mains, thence to coolers of the multitubular water-tube type, and after passing around the tubes they leave at a temperature of about 85 deg. Fahr. The gas is then drawn by exhausters which are driven by 250-hp. induction motors controlled to give constant gas suction and delivered to the tar extractors. The tar and ammoniacal liquors which condense here are run off along with the condensation from the coolers and separated by gravity in the tar separating tank.

From the tar extractors the gas passes to reheaters, where its temperature is raised to about 160 deg. Fahr. by the use of steam. The heated gas is then conducted to the acid saturators, lead-lined vessels, containing a solution of about 5 per cent. free sulphuric acid, and the gas leaves the saturators at about 85 deg. Fahr. At this low temperature the chemical affinity between the acid and the ammonia is so great that a neutral salt (ammonium sulphate) is easily obtained. The salt is continuously removed from this enclosed type of saturator by an ejector and delivered into a draining table from which it is run off together with the mother liquor into a centrifugal dryer in the usual way. When desired, concentrated ammonia liquor is produced instead of ammonium sulphate.

About 50 per cent. of the total daily yield of about 100,000,000 cu. ft. of gas is used at the steel plant and about 50 per cent. is used to heat the coke ovens. The ammoniacal liquor is treated with lime to decompose fixed ammonia compounds and is then heated to vaporize the ammonia which is conducted to the gas main and is absorbed in the saturators. About 1 per cent. ammonium sulphate and 2 per cent. of tar is obtained. The coke yield is approximately 84 per cent. of the weight of the coal coked. The plant is supplied with 60,000,000 gal. of water a day by two centrifugal pumps operated by 1300-hp., 3-phase motors.

All of the motors herein mentioned were furnished by the General Electric Company.

Custer Permanent Mold Rights.—The Custer Sandless Casting Company, Philadelphia, Pa., has closed a contract with the American Brake Shoe & Foundry Company, by which the latter acquires the exclusive right to manufacture brake shoes by the Custer process in the United States and Canada. It has also made a contract with the Pennsylvania Steel Company, giving that company the right to manufacture cast iron and manganese steel track accessories under the Custer process. Several other important contracts are pending for the use of this process, which involves the making of castings in permanent molds.

The Youngstown Iron & Steel Company, Youngstown, Ohio, manufacturer of black and galvanized iron and steel sheets and metal specialties, is operating its plant to full capacity.

The new plant of the Mount Union Refractories Company at Mount Union, Pa., is progressing rapidly. All foundations are completed, the building of the kilns is well under way and the structural steel is being erected. The plant will be of modern fireproof construction. The company makes silica and magnesite brick.

The Central Foundry Company, with New York offices at 90 West street, will erect a Universal cast-iron pipe plant and make other improvements on its property at Holt, Ala. The company has a blast furnace and by-product coke ovens at Holt. The contemplated improvements are to be large and costly and will include a new foundry, a feature of which will be continuous operation. The new plant will have equipment enabling every economy to be made in handling material and production generally.

A Turbo-Cupola Blower

For driving pressure blowers of any type, and more especially those employed in foundries, the Terry Steam Turbine Company, Hartford, Conn., has developed a small steam turbine-driven blower set. As compared with a blower driven by a reciprocating steam engine or an electric motor the advantages claimed for this new set are greater reliability of operation and smaller floor space, together with the elimination of trouble usually experienced with electric motors such as sparking commutators and the burning out of armatures. Fig. 1 gives a view of the new type high-pressure turbine-driven blower which has been developed by this company, while Fig. 2 shows a view of the turbine with the casing split in the horizontal plane and the cover lifted to show the interior construction.

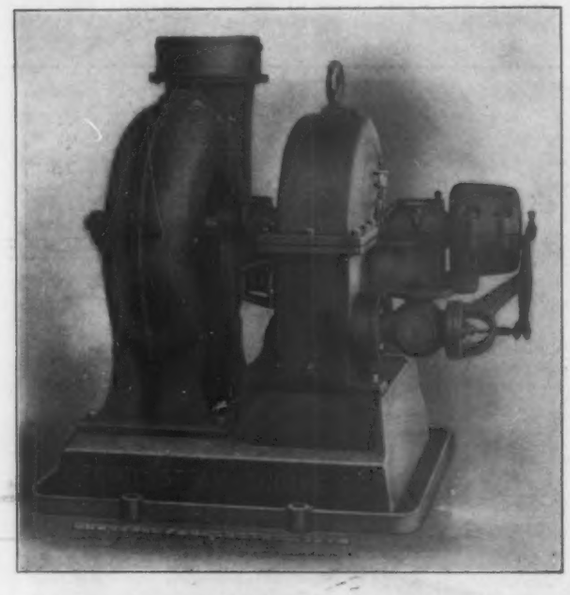


Fig. 1—The New Type High Pressure Turbine-Driven Blower for Cupola Use Built by the Terry Steam Turbine Company, Hartford, Conn.

In the low speed type of turbine it is possible to connect it directly to the fan shaft making one unit of the revolving parts from both the fan and the turbine and thus doing away with the belts, gears, adjustable belts and foundations. The elimination of the belt connection between the steam engine or the electric motor and the fan enables the blower set to be located close to the cupola, thus avoiding air losses due to long supply pipes, bends, etc., while at the same time the floor space is materially reduced, the amount required being only one-fourth that needed with a belted set. For ordinary foundry work a non-condensing steam turbine is employed which has but one wheel and therefore a minimum length between the bearings.

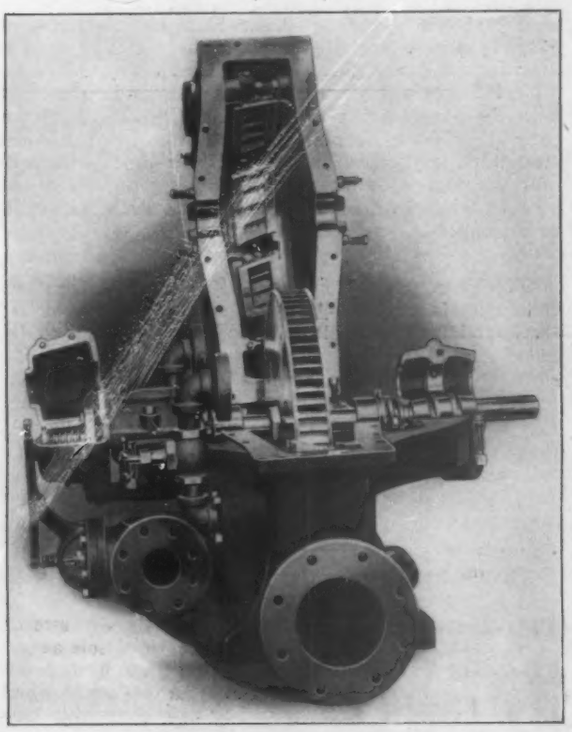


Fig. 2—View Showing the Casing Split in the Horizontal Plane

The steam turbine illustrated herewith is of the low-speed type which enables it to be connected directly to the blower. The rotor is mounted on a short shaft supported by bearings in brackets which are cast solid with the casing. The steam expansion takes place in the nozzles fitted around the circumference of the wheel and the casing therefore is not subjected to the pressure of the live steam. This also results in reducing the radiation loss to a minimum since the temperature of the casing is that of the exhaust steam. As no oil is taken into the steam space, the exhaust from the turbine can be piped directly to an open feed-water heater in a convenient location. It is emphasized that it is not necessary to employ any special precautions in starting the turbine as it is claimed it can be started instantly when cold without any danger.

The 15-In. Washburn Drill

A new ball bearing drill having a capacity for high speed drills up to ¾ in. in diameter and known as the 15-in. size has been recently added to the line built by the Washburn Shops of the Worcester Polytechnic Institute, Worcester, Mass. The general construction of this drill is the same as the motor-driven drill and the multiple-spindle drill, illustrated descriptions of which appeared in *The Iron Age*, September 28 and October 26, 1911, respectively. The construction of the spindle pulley is such that the belt tension is carried on an independent bearing, thus relieving the spindle so that it runs absolutely free. The independent bearing is surrounded by a concentric ring which retains the lubricant supplied and at the same time prevents it from spattering.

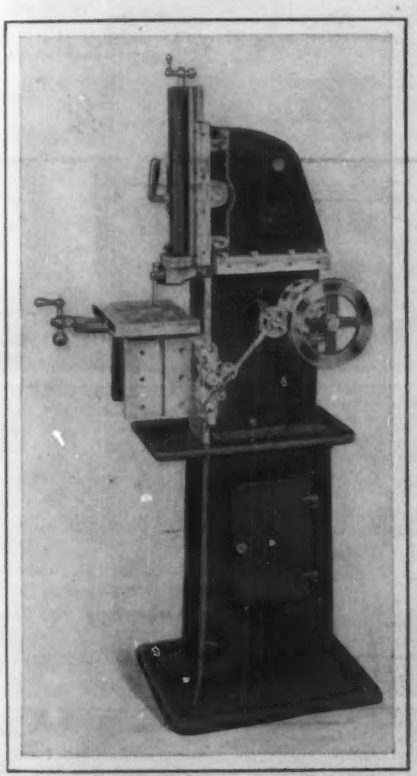
A New 15 in. Drill Press Built by the Washburn Shops of the Worcester Polytechnic Institute, Worcester, Mass.

An automatically locked belt tightener on which patents have recently been secured controls the tension. With this arrangement the cone pulley is locked in every position in which it may be left and the only labor necessary when the belt tension has to be changed is to turn the hand wheel. Both square and round tables can be furnished for the machine; the dimensions of the former are 12 x 12 in. and the apron is 12 x 4 in. The square table can be tilted on a bracket revolving around the post, an arrangement which permits this table to be swung out of the way when the round one is to be used. The diameter of the round table is the same as that of a side of the square type, namely 12 in., and this table slides on the column and can be replaced by either a cup or crotch center, both of which are furnished with the machine. The net weight of the drill including the counter shaft which is fitted with ring oiling bearing and has a loose bronze bushing for the loose pulley is 625 lb.

Vertical Shaper Attachment

To enable a 7-in. Precision shaper to be converted from a horizontal machine to a vertical one, L. E. Rhodes, Hartford, Conn., has placed on the market a vertical shaper attachment. When it is desired to make the change from one type of tool to the other the regular ram is removed and the attachment is secured in its place by the cap screws.

The attachment consists of a housing, a bell crank and a horizontal gear shaft which is shown at the right of the attachment and midway between the two cap screws. One end of the bell crank connects with the rocker arm of the shaper and obtains motion therefrom while the other end is in the form of a segment on which teeth are cut. These teeth mesh with a spur gear mounted on the horizontal shaft and this gear in turn engages with a rack on the vertical ram. The length of the stroke is adjusted in the customary way and the position of the ram is regulated by the ball handle at the top of the attachment and is held in the desired position by the binder on the left. The ram



A New Vertical Attachment for Use on Horizontal Shapers Made by L. E. Rhodes, Hartford, Conn.

is held in ways which pivot on the central horizontal shaft and the ram and the ways can be tilted to an angle for work which is to be machined in that way. The cap screws serve to clamp the ram ways at any desired angle while a positive stop is provided for setting them in a vertical position. In addition to tilting the ram and ways, the head can be swiveled to bring the cutting tool in the desired position. After the ram head has been swiveled, it is kept from moving by a set screw directly in back of it. The collar for the tool post has a projection to take the end thrust of the tool. An auxiliary table is provided which provides a hand feed at right angles to the power traverse of the main table.

The following table gives the principal dimensions and specifications for the attachment:

Maximum stroke of vertical ram, in.	3½
Maximum stroke of horizontal ram, in.	7
Maximum distance from table to ram, in.	8½
Traverse feed, in.	9

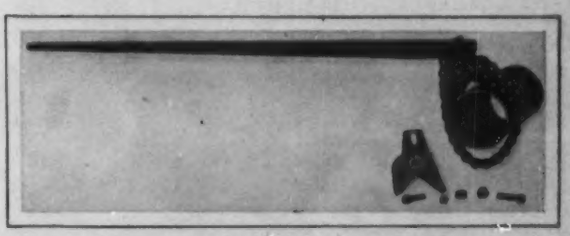
When it is necessary to convert the shaper from one type to another the change can be made in approximately 10 min.

A New Pipe Wrench

For steam and gas fitting, gas and oil lines, oil well contractors, coal mine work and general contracting, the Gealy Wrench & Mfg. Company, Grove City, Pa., has brought out a chain pipe wrench in which an entirely new principle is involved. This is clearly brought out in the accompanying engraving which shows the inside of the jaw, the cam and cam thrust with release.

The wrench consists of a handle with loosely mounted alligator jaws and a flat link chain. The handle acts as a cam lever and the jaws, which are loosely mounted by a slot through which the bolt fastening them to the handle passes, act as a cam thrust. This slot permits the handle bolt to change its position and gives free play of the handle as a cam lever. The chain is fastened permanently to the handle on one side of the pipe and hooks in the jaws on the opposite or right side. The chain is tightened by the action of the cam lever which forces the engagement of the jaws and the pipe. As the jaws are mounted loosely on the handle the cam lever can play freely on the cam thrust and the release of the grip is positive and instantaneous due to the fastening of the chain to the handle on one side and to the jaws on the other. It is pointed out that in this wrench there is absolutely no strain on the bolt joining the jaws and the handle, this part merely serving to hold the parts together when the wrench is not in use.

It is claimed for this wrench that the leverage principle assures a powerful grip and that the alligator jaws with the chain give an equal pressure on the pipe and thus prevent crushing. The wrenches are made of drop-forged high carbon steel and the chain is of the usual flat link type.



A New Type of Pipe Wrench Made by the Gealy Wrench & Mfg. Company, Grove City, Pa.

Five sizes of wrench are made so that pipe from ½ to 12 in. in diameter can be handled. The over-all length of the wrenches ranges from 18 to 66 in. and the weight from 3½ to 76 lb. In the accompanying engraving next to the largest size of wrench which weighs 41 lb. and has an over-all length of 5 ft. is shown gripping a 6-in. pipe. Regularly the amount of chain furnished varies from 12 to 54 in. according to the size of the wrench, but if required special lengths can be furnished. If desired the largest size wrench can be supplied to handle 16-in. pipe instead of the regular maximum diameter which is 12 in.

The Craig Ridgway & Son Company, Coatesville, Pa., has received the contract for equipping the new bureau of printing and engraving that is now being erected by the Chinese Government at Peking with its steam hydraulic elevators. It is expected that the initial shipment will be made about the first of the year. The new bureau is to be an exact reproduction of the United States bureau at Washington which was equipped with the Ridgway elevators some years ago.

The Worth Brothers Company, Coatesville, Pa., is experimenting with a new steel railroad tie. A number of them were manufactured by the company some time ago and are now being tried out on the Wilmington & Northern branch of the Reading Railroad. So far they seem to be giving good satisfaction.

The Debevoise-Anderson Company, 95 Liberty street, New York, announces that it has been appointed sole agent east of Pittsburgh and Buffalo on the washed metal produced by the Youngstown Steel Company, Youngstown, Ohio.

Machine Molding for Large Castings

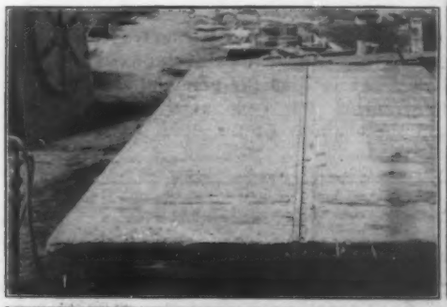
Details of Making 19,000 lb. Valve Castings. Interesting Application of the Universal Board for Large Split Patterns

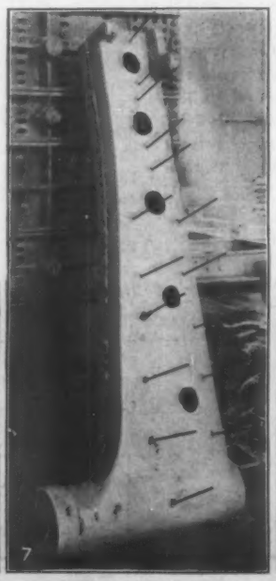
At the recent meeting in New York of the National Founders' Association, A. E. McClintock, commissioner of the association, exhibited a large number of lantern slides illustrating the accomplishments of molding machinery. Some of these views showed how successfully large castings have been molded, and through Mr. McClintock the following notes and the accompanying illustrations have been obtained:

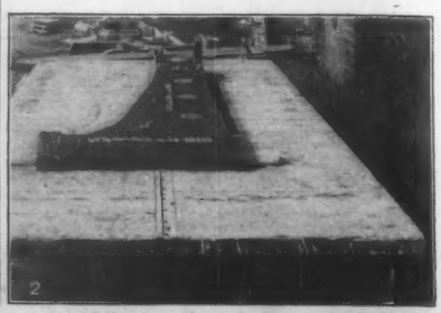
Universal Board in the Wm. Sellers Foundry

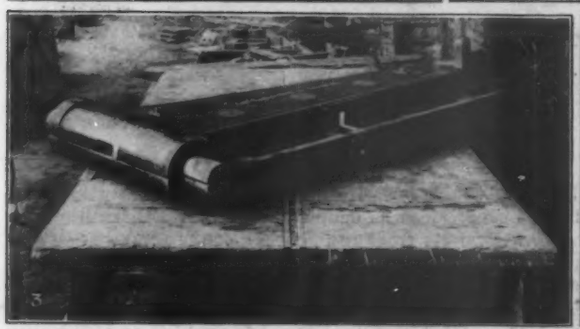
An objection raised by many manufacturers against mounting patterns for jarring machines is that too few pieces are made from a single pattern, and that for this reason it does not pay to board the pattern. To overcome this difficulty Wm. Sellers & Co. have devised a universal board, whereby both halves of any split pattern can be mounted perfectly in less than two hours' time by any intelligent workman. By this system it pays to mount a pattern to make one mold. Fig. 1 shows in the William Sellers foundry in the foreground the universal pattern board. As is indicated, there is an iron groove running both lengthwise and crosswise through the center of this board. This groove is the center line, and in the groove is drilled holes for flask pins.

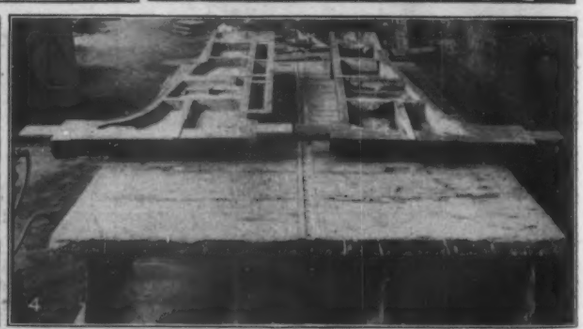
In mounting the pattern the cope half

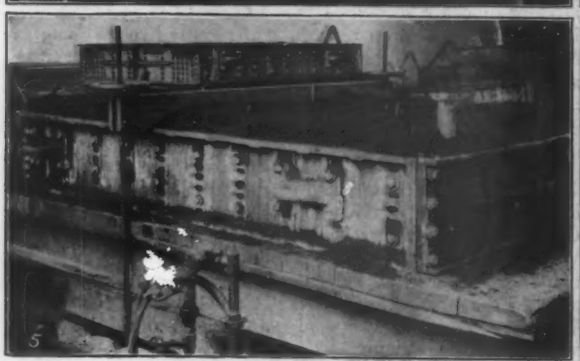


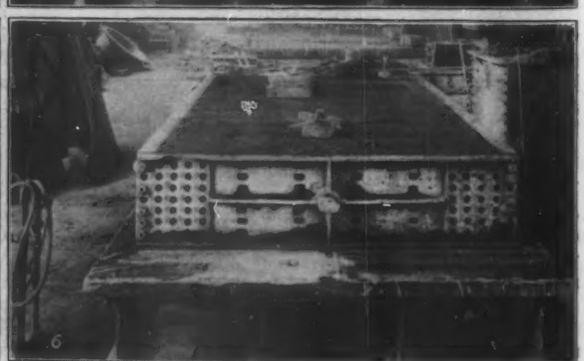












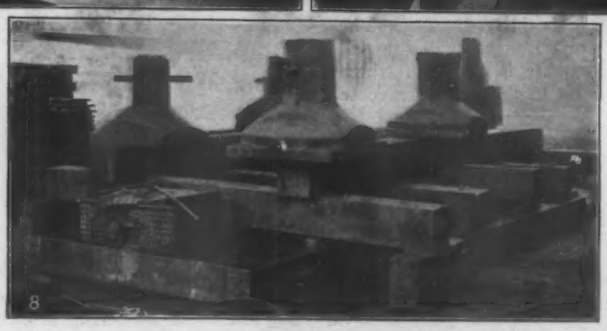


Fig. 1—The Universal Pattern Board with an Iron Groove Running Lengthwise and Crosswise. Fig. 2—Pattern Lying in Position on Board Getting Marked with Reference to the Grooves. Fig. 3—Marking Drag Half of Pattern in Reference to the Cope Half. Fig. 4—The Two Halves of the Pattern with the Four Pieces of Steel Screwed to Each One, Adapting the Method to Any Shape of Castings. Fig. 5—Flask Secured Ready to Jar, Showing the Method of Clamping, Which Fits Varying Widths and Hights of Flask. Fig. 6—The Struck-off Mold with Hooks Inserted in the Pattern and Secured to Lift the Pattern with the Mold. Fig. 7—Top View of the Casting for a 60-in. Radial Drill Arm as It Came from the Sand Without Cleaning. Fig. 8—Quick, Handy Method of Weighting the Mold for a Large Bed Plate, Weighing 40,000 Lb.

USE OF THE UNIVERSAL PATTERN BOARD IN THE FOUNDRY OF WILLIAM SELLERS & CO., PHILADELPHIA

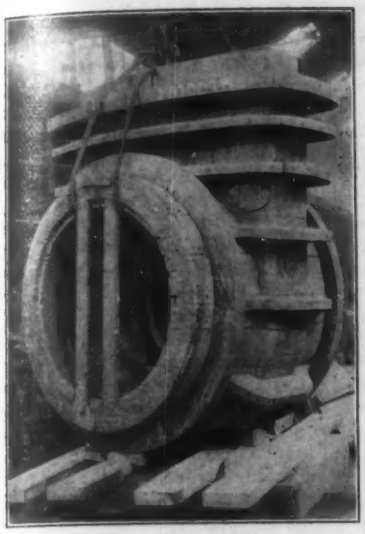


Fig. 9—Pattern of 60-in. Ludlow Gate Valve Body, Which Weighs Cleaned 19,000 lb.

is laid on the board, the flask is put on, and the pins engaged in the holes in the board. The pattern is now moved into a proper position in relation to the flask bars, and the flask carefully lifted off so as not to move the pattern. Fig. 2 shows the pattern lying in position on the board. Small pieces of flat steel which accurately fit the iron groove are now stood upright in the groove wherever the grooves cross the pattern, and the edge of the pattern is marked with a knife on each side of the pieces of steel. The pattern is now turned over, with the flat side up, and a straight-edge is used to carry the lines across the flat part of the pattern. Now, these pieces of steel are screwed to the pattern on both lines, so as to center the pattern both ways.

Fig. 3 shows the next move, where the drag half of the pattern is laid on the cope half, and brought into position. Marks are now made on the drag half of the pattern on each side of the piece of steel, which have been screwed on to the cope half. This half of the pattern is turned over, the lines are carried across as before, and the pieces of steel screwed on in the same manner as for the cope. Fig. 4 shows the four pieces of steel screwed on each half of the pattern, ready for molding. These operations never take to exceed two hours, and on plain patterns it can be done much quicker. It makes no difference how crooked the pattern may be, this method will center both cope and drag half of the pattern perfectly.

The procedure then is to place the pattern on the board, with the flat pieces of steel engaged in the groove in the board and centered. The flask is put on and filled with sand. Fig. 5 shows the flask secured ready to jar. Notice the quick method employed to clamp the flask to the table of the machine. This clamp fits all widths and hights of flask, and is very simple, and quickly put on. After ramming, the strap is removed and the mold butted and struck off. Fig. 6 shows the hooks which are inserted in the pattern and secured to the top of the mold in order to lift the pattern with the mold. The pattern is drawn by hand. The drag half of the pattern is then put on the table. The drag flask is put on, secured and rammed as before. The flask and pattern are secured, taken from the table, the pattern drawn, and the mold finished.

Fig. 7 shows the casting made from this mold, and is a view of the top or cope half. It is noticeable how smooth and true the lines are. There was not a blemish or spot in the entire casting, and this shows it just as it came from the sand, without being cleaned. The casting is that of a swinging arm for a 60-in. radial drill. It would be next to impossible to produce so fine a casting as this by hand methods, and the only skilled labor employed in the production of this casting was in the finishing of the mold and the setting of the cores—the rest being entirely performed by handy men.

Fig. 12—A 42-in. Ludlow Plain Gate Valve Body Made in Green Sand on a Jarring Machine

Fig. 10—Half of 60-in. Valve Pattern with Flask Ready for Ramming

Fig. 11—Pouring a 60-in. Gate Valve Body-Mold in a Pit

Fig. 8 is a view of a very quick, handy, and accurate method of weighting and securing the mold for a large bed plate, which weighs 40,000 lb. The long, square beams across the mold are cast iron. The foundry is supplied with various lengths of these beams for weighting different sized molds. These are quickly lifted into place, chaplets secured under them, and the upright weights shown are picked up by the crane and a great deal of time is saved in weighting so large a mold.

Jarring Machines for Large Ludlow Valves

The making of large gate valves on a jarring machine has been considered a difficult feat to accomplish, on account of the deep, narrow pockets which occur at the neck of the valve. This sand has no support, and there are small opportunities of securing it. It is now being accomplished at the works of the Ludlow Valve Mfg. Company, Troy, N. Y., and Fig. 9 shows the pattern of a 60-in. gate valve body, which is the extreme limit of the machine. This casting, when cleaned, weighs 19,000 lb.; the circular opening is 60 in. The casting when tested must be tight at 300 lb. water pressure. On account of the

heavy ribs, the mold is made in dry sand, and one can be cast every day by having a duplicate flask, where in hand molding in green sand it took about a week to make one.

Fig. 10 shows half of the pattern, with flask in place, ready for ramming. The flask is of very heavy construction, iron bars being used exclusively. Fig. 11 shows the operation of pouring a 60-in. gate valve body. The mold has been dropped in a pit, and rammed up to prevent run-outs. The pressure on this mold is very great, and as the core comes through the flask it is necessary to ram them up in a pit.

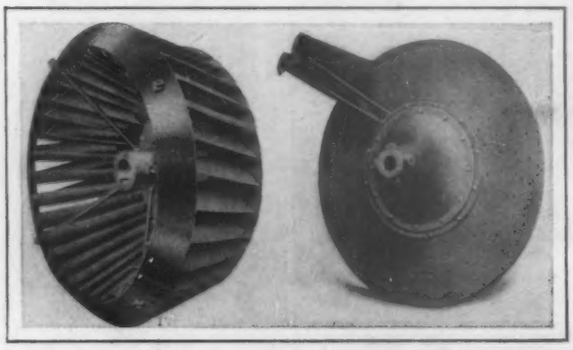
Fig. 12 shows a 42-in. plain gate valve body. The casting is made in green sand on a jarring machine. No better casting can be produced by hand methods, however skillful the molder may be. The weight of this casting is 6000 lb. The Ludlow Valve Mfg. Company makes valves from ¾ in. to 96 in. of all types and kinds, and more than 75 per cent. of the output is being produced on molding machines of various types.

The Conoidal Fan

New Multiblade Product of the Buffalo Forge Company

A new fan has been developed by the Buffalo Forge Company, Buffalo, N. Y. It belongs to the multiblade type which in recent years has proved in many ways superior to the usual centrifugal type for high-volume low-pressure service. Certain original features are claimed for which patent application has been made.

The blade construction gives the whole wheel the shape



Single Conoidal Fan Wheel Back Plate and Hub of Wheel

of the frustum of a cone, with the inlet on the side corresponding to the base of the cone. Looking straight into the inlet, the conical shape of the blades at once arrests attention. The prevalence of conical shapes in the design is responsible for the name Conoidal, which has been given the fan. Instead of blades that have parallel edges, they are slanting, so that at the inlet side the blade is much narrower than at the back.

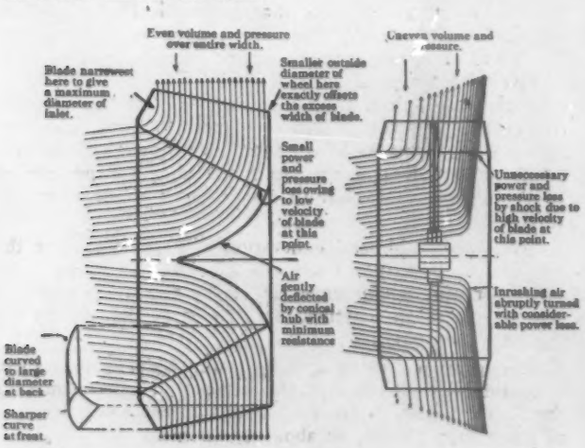

Even volume and pressure over entire width.
Uneven volume and pressure.
Blade narrowest here to give a maximum diameter of inlet.
Smaller outside diameter of wheel here exactly offsets the excess width of blade.
Small power and pressure loss owing to low velocity of blade at this point.
Unnecessary power and pressure loss by shock due to high velocity of blade at this point.
Air gently deflected by conical hub with minimum resistance
Inrushing air abruptly turned with considerable power loss.
Blade curved to large diameter at back.
Sharper curve at front.

Diagram to Illustrate How the Conoidal Fan Handles Air

To understand the advantages of this design, it is necessary to bear in mind the fact that the suction produced at the inlet of multiblade fans makes the air rush in almost at right angles against the opposite side, usually referred to as the drive side, of the fan, and its course is then abruptly broken to an angle of nearly 90 deg. toward the periphery. This abrupt deflection causes loss of power and velocity. It is this very loss that it is sought to overcome in the Conoidal fan, by the increasing width of the blade from front to back. The width of blade at the drive side is large to enable it to handle the excess amount of air. A conical, gently sloping hub also deflects the inrushing air so that it describes, it is explained, an easy unbroken curve toward the periphery. The blades are curved to a varying diameter, the curve being smallest at the inlet side and easier at the drive side, just as though curved over the surface of a cone. The grade of the curve of the blades at all points from front to back is proportioned to scoop up the air with the least impact, the diameter of the curve being in proportion to the diameter of the inlet.

The diagram is to illustrate these various features. Compared with a centrifugal fan, the efficiency of the fan is understood to be considerably higher, and the headroom required very much smaller; it is therefore especially desirable where space is limited. The Conoidal fan also has, it is found, a practically constant efficiency curve over a total range of nearly 60 per cent., permitting a load of nearly 30 per cent. above or below rated capacity with all but maximum efficiency. The great width of each blade at the back, it is added, gives exceptional strength to the wheel, so that high speeds and loads can be maintained.

The Brass Manufacturers' Annual Meeting

The National Association of Brass Manufacturers held its annual meeting at the Hotel Astor, New York, December 13 and 14. The meeting was well attended. Among other matters taken up for consideration, the following resolution was passed:

Whereas, The making of net prices is harmful—tends to demoralize the market and drive prices and values to a lower level, therefore be it

Resolved, That the National Association of Brass Manufacturers hereby agree to discountenance and discontinue the making of net prices in so far as it lies in their power to do, and to urge all manufacturers to discourage and discontinue this harmful method of doing business and instead to quote, sell and invoice their goods from the regular lists and discounts, as has been the custom for years.

The following officers were elected for the ensuing year: Theodore Ahrens, Louisville, Ky., president and chairman board of trustees. Trustees—A. S. Hills, Haydenville, Mass.; D. H. Roberts, Detroit, Mich.; C. C. Hale, New Haven, Conn.; W. H. Wasweyler, Milwaukee, Wis.; Fred Sommerville, Toronto, Canada; J. W. Sharpe, Jr., Philadelphia, Pa. Delegate to the National Committee, H. M. Hoelscher. Commissioner, W. M. Webster, 64 Randolph street, Chicago. The association will hold its next meeting in Chicago March 19 and 20.

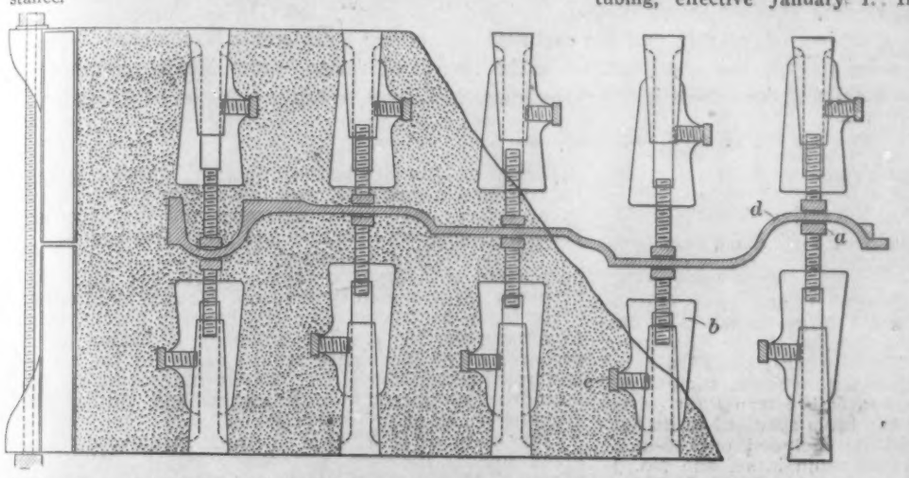
At the recent annual meeting of the stockholders of the Standard Roller Bearing Company, of Philadelphia, the following directors were elected: Lenox Smith, William D. Sloane, Isaac H. Clothier, W. B. Osgood Field, Henry DeForrest Baldwin, Edwin Packard, Herbert DuPuy, Edward B. Smith, John C. Winston, George H. B. Martin, James Boyd, and R. S. Woodward, Jr. The directors elected the following officers: Lenox Smith, president; R. S. Woodward, Jr., vice-president and general manager; S. Howard Smith, treasurer and secretary.

The Coatesville Boiler Works, Coatesville, Pa., has the contract for supplying all the "man" pipes to be used in the construction of the Panama Canal. These pipes are large steel tubes which will be built into the canal locks in such a manner as to allow a man to descend through them to inspect and lubricate the lock mechanism. Several shipments of the pipes have already been made.

The New York Central has placed an order with the American Steel Foundries for 17,000 car couplers which will be executed at the latter's plant at Alliance, Ohio. This plant will resume night and day shifts after January 1, on account of large bookings.

New Molding Flask

To prevent castings and especially those having thin walls from warping while in the mold, Henry E. Thompson, 253 Clinton avenue, Newark, N. J., is manufacturing a new type of molding flask. The special advantage claimed for this flask is that it furnishes a means of support for the castings while they are in the sand, is designed to prevent the warping which has hitherto occurred and also to provide means for reducing the tendency of the castings to warp during the cooling process. Formerly time was lost in the process of peening the castings after they were removed from the mold to correct this warping. In this way it is pointed out that by the use of this device the waste of time and labor incident to this process is avoided and that sound and perfect castings are produced in the first instance.



A New Type of Molding Flask Employing a Series of Movable Pins to Prevent Warping of the Casting Invented by Henry E. Thompson, Newark, N. J.

The new flask is provided with stout abutments making contact with the two sides of the casting or portions thereof, while it is cooling in the sand. These abutments can be located anywhere on the flask or either of its parts to suit the particular work being done. They are made easily adjustable to suit the different castings and are supported firmly to resist any tendency to warp which the castings may develop during the period of cooling. One of the preferred forms of flask makes use of a cope and drag formed with a gridiron back composed of bars laid at right angles. These bars form a very convenient attachment for locating the abutment in any of the arrangements corresponding to the various kinds of patterns. Referring to the accompanying engraving, which is a view partly in elevation and partly in section showing the casting within the closed flask, the abutment consists of a pin, *a*, passing through and engaging threaded holes provided at various points on the flask. These pins can be screwed in more or less to adjust the point of engagement between the abutment and the casting accurately and lock nuts can be used to secure each pin more firmly in place. In another type of abutment which is also shown in this engraving the pin has a divided base, *b*, adapted to fit and straddle the gridiron part of the flask in any given position. After the necessary adjustment has been made to make contact with the pattern, set screws *c* are used to secure the abutment while as a further precaution a wedge can be inserted under each pin in the space between it and the bars of the gridiron to prevent the abutments from moving.

In use the pattern *d* is first placed upon a moulding board and the drag is then placed over it. The abutments are then adjusted by being screwed down until they make firm contact with the pattern at which time the drag is filled with sand that is tamped down. The drag is then released and turned upside down and the cope applied to it. During this part of the proceedings separators to hold the two parts of the flask slightly apart during the packing of the sand are used. Upon removing these separators when the pattern is removed and closing the mold, the sand surfaces are squeezed together so as to prevent the formation of spaces by which fins might be formed. Both portions of the flask having been united and the pattern *d*, being in place, the set screws *c* are loosened and the pins *a* are pressed into firm contact with the back of the pattern. The set screws are then tightened and the sand packed into the cope. After the pattern and separators have been removed from the mould the latter is again closed and the iron poured, the mold and the casting taking the position shown in the accompanying engraving. It will thus be seen that the castings will be firmly confined at various points by abutments which will resist the tendency to warp successfully.

Flexible Metal Hose and Tubing

The American Metal Hose Company, Waterbury, Conn., has issued a revised price list on its flexible metal hose and tubing, effective January 1. Important reductions have been made which will be appreciated by users of this hose which is adapted to steam, oil, gas, suction, air or for conduit work. It is constructed either interlocking, double groove or single groove. Regular sizes are 3/16 to 3 in. in diameter, larger sizes being made on order.

While the company has been in existence over three years, for the first year it did no manufacturing but imported all of its hose from a German metal hose factory with which it was connected. For the last two years it has been manufacturing at its new factory in Waterbury, and is to-day entirely separate from any foreign connections. The company's experience has shown that in metal hose it has a good article, the use of which even at current prices is a decided economy. In order, however, to build up a large business in it the company feels that it will be necessary to reduce the cost to the consumer to a point where it will always be attractive. It is proposed do do this as fast as reductions in manufacturing costs will allow. The new price list, with reduced prices, marks a step in this direction.

Flexible metal hose is past the novelty stage and is to-day a recognized commercial article. The United States navy has adopted it and some time ago drew up specifications for a manufacturing test, etc. The business is showing a constant increase; the only complaint that the company makes is that sometimes its hose lasts too long.

The Tariff Board says that in the case of a suit of clothes retailing at $23 the farmer receives for the wool $2.23, and his profit is 68 cents; the manufacturer of cloth receives for his product $4.78, and his profit is 23 cents; the wholesale clothing dealer receives for his product $16.50, and his profit is $2.18; the retail clothing dealer receives $23, and his profit is $6.50. This shows why the cost of living was less in the old days, when the process of turning wool into a suit of clothes was all done on the farm.

The English Miners' Federation will take a vote on the question of stoppage of work in all mines based on a demand for a minimum wage. If two-thirds of the members vote to stop work a national strike will be ordered for the end of February.

Immigration returns at Ellis Island for this year show a considerable decrease in the number of aliens entering the United States. Compared with 1910 there is a decrease of more than 320,000, or about 30 per cent.

Active work is now going on in the building of the new open-hearth steel plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio, practically all of the contracts having been placed.

The Machinery Markets

In a general way the machinery business of the country is quiet. Various influences incidental to the closing of the year are largely responsible for the condition which exists. Despite the quietness reported from practically all of the machinery centers, there exists a decidedly healthy tone based on the anticipation with which dealers and manufacturers are looking forward to the early months of 1912. At the same time many of them have done an excellent volume of business during December, one or two prominent houses comparing the month with that of March last when they were busy. New York dealers seem to have done better than those in most other cities, two or three fairly good orders having been placed and small orders fairly numerous. New York dealers whose line of machinery is varied are working on some very encouraging prospects. The improvement in general conditions continues in New England. Detroit has many inquiries and a demand for second-hand machinery. Philadelphia has closed a few deals, but is looking forward. Cleveland has been quiet, with sales mostly of single tools. Cincinnati has some export business in hand and is interested in a rumor that a Central Western railroad is to issue a list. In the South building operations continue to be a subject of interest, and the coal fields are taking considerable machinery. Texas expects that good crop conditions will make business, while the revival of demand from Mexico continues. The Pacific coast is doing a quiet business, mostly for replacement with some tentative inquiries of a satisfactory character.

New York

NEW YORK, December 27, 1911.

The last days of 1911 find New York machinery men almost without exception in an optimistic frame of mind with regard to business prospects. They have made some good sales during December, and have reason to anticipate better ones and a larger number in the early months of 1912. The Hewitt Motor Company, which is to manufacture motor trucks, placed a substantial order for its new plant within the last few days, and the Delaware, Lackawanna & Western Railroad is understood to have bought the tools specified in its list referred to recently. This list included one 16-in. x 6-ft. Hendey geared head tool room lathe, one No. 3 universal grinding machine, one 24-in. Gould & Eberhardt high duty shaper, one 24-in. back geared vertical drill press, one No. 3 Brown & Sharpe universal milling machine and one safety emery wheel grinder. A more important list, which will include a number of heavy machine tools, has not been given to the trade by the Lackawanna Railroad, but is said to be in course of preparation. The list anticipated from the Delaware & Hudson Railroad, so often referred to, has not yet materialized, and dealers say that action with regard to it probably will go over to the new year. Buying for replacement by large manufacturing interests has added to the good feeling in the trade. Sellers who carry an extensive and varied line are busy with prospects which must produce business some time in January.

Papers have been filed with the Secretary of State at Albany for the incorporation of the Hewitt Motor Company, with offices in New York City. The original Hewitt Motor Company was one of the pioneers in the automobile industry, and especially in the commercial department, being one of the first in this country to produce light delivery wagons and heavy trucks. In January, 1910, a combination was effected between that company and the Metzger Motor Car Company, now of Detroit, Mich.; and Hewitt trucks have been produced by the Metzger Motor Car Company through its truck department, 6 to 10 East Thirty-first street, New York, of which Edward R. Hewitt, the engineer of the original Hewitt Motor Company, remained in charge. The new company has acquired from the Metzger Company its interest in the truck department, and will manufacture Hewitt trucks in its own new factory and service station at West End avenue and Sixty-fourth street as soon as the equipment has been installed, about January 15. In the last few days the company has placed orders for about $30,000 worth of machine tools. Mr. Hewitt is in entire charge of the engineering and construction of the Hewitt trucks. The directors of the new company are M. F. Burns, E. C. Converse, Wm. E. Corey, E. R. Hewitt and Ambrose Monell. The company has an authorized capital stock of $1,000,000 in one kind of stock only; no bonds.

The Breeze Carbureter Company, 250-252 South street, Newark, N. J., desires quotations on the equipment for a brass composition and aluminum foundry to turn out 2000 to 3000 lb. of castings a week. The information should be given as quickly as possible, as the foundry is now in course of erection and the equipment must be purchased speedily. The equipment called for comprises two oil or coal and coke furnaces, a hand molding machine, flasks, a brass founder's three section drying stove, foundry bellows, molders' shovels, graphite crucibles, a core oven with five compartments, small sprue cutter, small metal separator and the necessary riddles, clamps, wire brushes and other small tools.

The A. V. Mfg. Company, New York, recently incorporated with $200,000 capital stock, has had plans prepared for a one-story fireproof factory building, 60 x 100 ft., to be erected on a site recently purchased at Poughkeepsie, N. Y. The company is having a list prepared of its machinery requirements for the manufacture of motor specialties. The incorporators are Allesandro Bolognesi, Aldo Bolognesi and William H. Hoppin, Jr., all of 54 Wall street.

The plant of F. E. & M. Vernon, manufacturers of blank books, Eleventh and Berry streets, Wililamsburgh, N. Y., was totally destroyed by fire December 23. The estimated loss is $500,000, partly covered by insurance.

The Vanity Mfg. Company, Buffalo, N. Y., has been incorporated with a capital stock of $50,000 and will engage in the manufacture of polishes and ointments. Manufacturing space has been secured in the Schoellkopf Power Building, Washington and Chippewa streets. The directors of the company are: Almon W. Lytle, Edward C. Koester and R. C. Long.

The Electric Wind Turbine Company, Buffalo, has been incorporated with a capital stock of $150,000 to manufacture electric machinery, etc. The incorporators are J. G. Childs and B. G. Tallman, corner of Perry and Mississippi streets.

The Buffalo Natural Fuel Company, Buffalo, will build an extensive plant, including a machine and repair shop, at Genesee, Monroe and Brown streets, to cost $100,000.

The Kendall Refining Company, Buffalo, will build an addition to its distributing plant on Rapin avenue and the Erie Railroad.

The Manzel Bros. Company, Buffalo, manufacturer of auto oil pumps, etc., is building a 1½-story brick factory, 60 x 200 ft., at Babcock street and the Pennsylvania railroad.

Business Changes.

The offices of the Vandyck-Churchill Company have been moved from 91 Liberty street and are now on the fifth floor of the Singer Building, 85 Liberty street.

New England

BOSTON, MASS., December 26, 1911.

The improvement in general conditions continues. Some of the machine tool builders report a marked increase in orders, and, while the opinion is not unanimous, the generally prevailing idea is that the opening months of 1912 will see a very good business, equal at least to the corresponding period of 1910. Usually December is not a month of increase, but rather one of quieting down for inventory. This fact adds to the confidence begot from recent experience.

A letter from a large manufacturer of small tools which enter into machine shop equipment is of exceptional interest. It states in part: "It is conceded that business has not been quite normal during the past 12 months, and we think it is true that any concern that

has been able to maintain its normal volume of business has done well. Fortunately we are able to record on our books at the close of 1911 the fact that we have made a good, substantial increase in volume during the year over that of 1910. It is true that the larger part of this increase has come from our export trade, especially in Central and South America, but there has been a good, steady increase all through our own country. We are in constant touch with our salesmen throughout all States of the Union and abroad, and through them we get a fairly accurate reflection of the general opinion of the trade on whom they call, and we are glad to say that from nearly every section there seems to be a feeling that business will be better during the coming 12 months than during the ones just passed. Crops for the year have been excellent, money is plentiful and easy, and stocks of hardware manufacturers as a rule are considerably less than normal. Railroads whose buying has been reduced during the past year are increasing their purchases, and most of the conditions that disturb business during the presidential year have already been adjusted or discussed until that coming event would be likely to have no great influence on business conditions."

The marine combustion engine builders have had an exceptional year, and signs point to fully as good a business for 1912. The development of the type has been rapid, and the cheaper kerosene, fuel oil and producer gas engines will play an important part in the next few years.

The L. S. Starrett Company, Athol, Mass., manufacturer of fine mechanical tools, has increased its capital stock to $3,500,000, of which $1,500,000 is to be 6 per cent cumulative preferred stock and $2,000,000 common stock. The officers of the company are: L. S. Starrett, president; F. A. Ball, vice-president; F. E. Wing, treasurer and secretary; W. G. Nims, assistant treasurer; with a board of nine directors consisting of the officers named and M. B. Waterman, Augustus P. Loring, John A. McGregor, J. H. Drury and W. B. McSkimmon. The last four named are officers of the Union Twist Drill Company, the second largest machine factory in Athol. The Union Twist Drill Company becomes a stockholder of the L. S. Starrett Company, and as such has representation on the board of directors, which is increased from five to nine. The L. S. Starrett Company was incorporated in 1900, succeeding to the business established by L. S. Starrett in 1880 and conducted by him individually up to the time of its incorporation. The capital stock of the incorporation was $100,000 in 1900, since which time the business has increased far out of proportion to the original capital. L. S. Starrett continues in active control of the business.

The Henry & Wright Mfg. Company, Hartford, Conn., manufacturer of drilling machines, has acquired the building of the Parker Motor Works in that city, and will continue its business there, instead of removing to Detroit, Mich., as had been contemplated. After careful consideration the company decided that, taking everything into account, it would be better to retain its residence in New England. The new works are located in the northern part of the city, in a rapidly growing industrial neighborhood. The building is excellently adapted to its purpose. It is one story, and the space is so arranged that equipment can be arranged to the best of advantage. The site includes ample land for extension in the future. The removal from the present shops on Sheldon street will be made at no distant date. The company's business is in a very prosperous condition. Recent orders have been so great as to equal production, November being the best month of the year to date, and December exceeding that.

A. Russell Dyke, owner of the Bay State Handle Company, Worcester, Mass., manufacturer of handles for small tools, has sold his business to a new Massachusetts corporation, known as the Bay State Tool Handle Company, having a capital stock of $10,000. E. C. L. Morse is the president, Annie L. Dyke treasurer, and Daniel W. Lincoln clerk. The change affords additional working capital, and the business will be expanded.

The R. T. Green Corporation has been chartered under Connecticut laws, to conduct the shipbuilding business at Nat's Point, Stonington, Conn., of the R. T. Green Shipbuilding Company, Chelsea, Mass. It is proposed to place the yard at Nat's Point on a modern basis. W. R. Green, Stonington, is the president of the new company, and R. T. Green is chairman of the board of trustees, which is made up of the officers.

Connecticut Valley industries, including those of large manufacturing centers of Connecticut, are looking to the New England Power Company to furnish them electric power from the great developments planned on the Deerfield River and other tributaries of the Connecticut. The estimate is that 40,000 hp. will be available as soon as the various hydraulic stations and storage reservoirs are completed, which will be at no distant date. Very little hydroelectric power is used in the great industrial State of Connecticut, and its introduction on a large scale would be of very great importance. This has already been proved in Massachusetts, especially in the central part of the State, which is served from the station at South Vernon, Vt., the property of the Connecticut River Power Company, which is owned by the interests having the other large projects in hand.

Philadelphia

PHILADELPHIA, PA., December 26, 1911.

Business shows a gradual slackening in practically all branches of the trade, as is to be expected at this time. Some few negotiations which buyers wished to clean up have been put through, but the majority of the business pending has been deferred until after the turn of the year. Manufacturers are giving a large share of their attention to the usual annual stocktaking, for which purpose a number of plants have and will be temporarily closed. Some scattered fresh inquiry for tools and equipment is reported, largely single tool propositions. No further railroad shop inquiries have developed, and little of the pending business has been closed.

In second-hand machinery the buying has been of desultory character, purchases covering a scattered class of equipment, and the aggregate volume of business being small. Some fair business in boilers, engines and general power equipment is in sight. Manufacturers of machine tools as well as merchants take a more optimistic view of the situation; the recent continued activity in the iron and steel trades is looked upon as encouraging, and it is believed that the betterment in those lines will result in an early improvement in the machinery business.

Otto C. Wolf & Son, engineers, are planning for the erection of a five-story brew house, a boiler house and a storage building for the Christian Schmidt Brewing Company, Second and Edward streets. Contracts for an installation of Babcock & Wilcox boilers, of 2000 hp., have been given out, and additional equipment for the boiler house will be purchased at a later date.

The Riverside Malleable Iron & Steel Works, Incorporated, of which William Austin, Scranton, Pa., is president, George Smallcomb, Pittston, Pa., is secretary, and F. W. McKown, also of Pittston, is treasurer, will locate in Scranton on or before April 1, and erect a plant for the production of malleable, gray iron, steel, bronze and gun metal castings. A line of specialties in steam and hydraulic engineering devices will also be manufactured.

It is stated that Swift & Co., Chicago, Ill., will erect a large warehouse in Chester, Pa. It is reported that a site has been purchased and that the building will be equipped with the latest improved appliances for handling meats, refrigerating machinery and other facilities required in the conduct of the business.

Irwin & Leighton, contractors and engineers, are taking bids and will probably close this week on the power equipment for the Webb Terminal Warehouse Company Building now under erection. The equipment includes three 150-hp. water tube boilers, a forced draft blower, one 150-kw., one 100-kw. and one 60-kw. generator, directly connected with compound Corliss engines.

The Hydro Mfg. Company has been incorporated with a capital stock of $25,000 and takes over the manufacture and sale of hydraulic and mechanical specialties heretofore conducted as a department of Barrett & Lawrence, Incorporated, engineers, Bullitt Building. The machine shop operated by the latter at 305 Cuthbert street will be conducted by the new corporation. No improvements or extensions in equipment are anticipated at this time.

The C. V. Stahl Motor Works, which has been engaged for some years in the manufacture of automobile engines, has been incorporated as the C. V. Stahl Motor Company, and is now erecting a factory building 40 x 90 ft. at Twenty-seventh and Diamond streets, which it expects to occupy in about a month. Additional machinery will be required for the new plant, but the requirements have not been decided upon.

The Lehigh Coal & Navigation Company announces that it has decided to go ahead with the construction of its large plant at Hauto, Pa., to furnish light and power to a number of towns and industries in the Lehigh Valley. This has been under consideration for over a year, but it has taken time to complete the necessary formalities. The project will involve an expenditure of about $3,000,000. L. B. Stillwell, consulting engineer, 100 Broadway, New York, will have charge of purchases in connection with the plant.

The Lehigh Valley Structural Steel Company, Allentown, Pa., is proceeding with the erection of additions to its plant to replace that portion destroyed by fire in November. The foundation for the new shops has been completed and the structural work fabricated. Two buildings, each 60 x 200 ft., will be erected. Orders for cranes and machine equipment for the new additions have been placed. The increased facilities will double the former productive capacity of the plant.

Chicago

CHICAGO, ILL., December 26, 1911.

The Swanson Motor Car Company, Chicago, has been incorporated with a capital stock of $50,000 to manufacture and deal in automobiles, motor cars, trucks, etc. The incorporators are Chas. E. Swanson, Elmer E. Challenger and Marshall E. Gallion.

Williams Anderson Machinery Company, Chicago, has been incorporated with a capital stock of $50,000 by J. H. Westover, Errick Waters and John Waters, all of that city. The company will engage in the manufacture of machinery.

The National Spring Tire Company, Chicago, organized to engage in the manufacture of automobile accessories, with a capital stock of $125,000, has been incorporated by Charles L. Sigman, Jr., Louis Valence, Charles H. Jackson, F. J. Karasek.

The Lee Motor Company, Chicago, incorporated by Clarence A. Anderson, Oscar J. Lee and Robert G. Henderson, with a capital stock of $50,000, will manufacture and deal in automobiles and accessories.

The Stiles Steel Bridge & Concrete Company, Chicago, contracting and construction engineer, has been organized with a capital stock of $25,000 by John W. Worthington, Byron C. Thorp and Louis W. Frank.

The Inventors Specialty Mfg. Company, Chicago, has been incorporated with a capital stock of $15,000 by James R. Glass, Henry M. Seligman and Bernice Harris, Chicago.

Fred C. Ehman & Co., Chicago, have been organized to manufacture machinery and appliances by Wilbur C. Bacon, Henry S. Blum and Mary Blum. The capital stock is $10,000.

The Double Blast Mfg. Company has been organized with a capital stock of $6,600 by N. W. Lundy, A. C. Lundy and P. C. Regan. The company is to locate at North Chicago and will manufacture soldering furnaces.

The Davis Milk Machinery Company, Chicago, has closed a contract for two acres of land at North Chicago on which a plant 118x423 ft. is to be erected at an estimated cost of $40,000.

Kirchoff & Rose are preparing plans for the erection of a four-story factory building 80 x 100 ft. to cost $60,000. This is to be located at Clinton and Oregon streets, Milwaukee, Wis.

The Edgar-Allen American Manganese Steel Company, Chicago Heights, Ill., is building an addition to its machine shop 90 x 120 ft.

At Champaign, Ill., an issue of bonds to the amount of $35,000 has been authorized to provide for an electric lighting system.

The Hackney Mfg. Company, St. Paul, Minn., recently organized, has acquired a site of 18 acres and is having plans prepared for a plant complete with foundry, machine shop, erecting rooms, etc., for the manufacture of farm implements and specialties.

The Farm Power Machinery Company, 124 East Twenty-sixth street, Minneapolis, Minn., is being organized to manufacture farming implements. The company is having plans prepared for the erection of a factory and will soon be in the market for equipment.

The Seevers Mfg. Company, Oskaloosa, Iowa, has under consideration the removal of its business to Peoria, Ill., where a tract of 21 acres has been purchased, and upon which a new plant is to be erected. This company, in addition to its fabricating shop, manufactures a line of boilers and engines.

Cleveland

CLEVELAND, OHIO, December 26, 1911.

The past week has been a quiet one in the local machinery market. There has been little call for machine tools, and orders have been mostly for single tools. Two new inquiries came out for small lots of tools, each aggregating about $3,000. Dealers are looking for little activity before the middle of January. There is a fair amount of business in prospect in steel plant equipment and in handling machinery for various purposes, but the placing of orders is being generally delayed until after the first of the year.

The foundry trade is rather quiet, as is usual at this time of the year, although the demand for steel castings has shown an improvement recently.

The Potter Mfg. Company, Geneva, Ohio, of which W. A. Potter has been sole owner for several years, has been incorporated under the same name with a capital stock of $25,000. Several leading business men in Geneva have become interested in the company, and additional capital will be provided to enlarge the factory and to add new lines of hardware specialties which the company makes. Among the men who have become interested in the company are John Hasenpflug, president of the Champion Safety Lock Company, and A. M. Ford, treasurer of the Geneva Metal Wheel Company.

The Grant-Lees Machine Company, Cleveland, manufacturer of gears, has acquired control of the Stuyvesant Motor Car Company, Cleveland, and the plant of the latter company will be moved into a new building that is to be erected adjoining the Grant-Lees plant at Quincy avenue and East Sixty-ninth street. This building will be 120 x 120 ft. and four stories. Some new machinery will be required. The plant of the motor car company will continue to be operated under its present name.

The Avenmarg & Carter Machine Company, Cleveland, has been incorporated with a capital stock of $10,000, to succeed the partnership of Avenmarg & Carter, machinists, 1734 Columbus road. The company is planning some extensions to its present line of products.

The Brook Electric Construction Company, Cleveland, has been incorporated with a capital stock of $10,000 by John L. Schreiner and others to manufacture and deal in electrical supplies.

The Doylestown Aluminum Wear Company, Doylestown, Ohio, has been incorporated with a capital stock of $10,000 by Harvey J. Heller and others.

The Weger Motor Company, Cleveland, has been incorporated with a capital stock of $100,000 to manufacture internal combustion motors. E. T. Rock, J. B. Seymour and others are the incorporators.

With a capital stock of $40,000 the Buckeye Lighting & Power Company, Covington, Ohio, has been incorporated to build and operate a gas or electric light plant or plants. Among the incorporators are J. H. Marlin, A. W. Landis and John Weaver.

The Goodlime Mfg. Company, Kent, Ohio, has been organized with a capital stock of $40,000 to manufacture novelties and office supplies. John Gatz is presitent, R. M. Vick general manager, and W. W. Rigg secretary.

The Vaughan Paint Company, Cleveland, has bought a site on Lakeside avenue, on which a new plant will be erected.

The Hydraulic Press Mfg. Company, Mt. Gilead, Ohio, will add a brass foundry to its present plant.

The Springfield Compressed Air Machine Company, Springfield, Ohio, has been organized with a capital stock of $100,000 to place on the market a new air compressor invented by L. C. Keiser, of Decatur, Ill. For the present the company will have its product manufactured by another Springfield concern.

The A. J. Clark Company, Beloit, Mahoning County, Ohio, manufacturer of acetylene gas engines and lighting plants, is planning to move its plant to Youngstown and to double its present capacity.

The Louth-Geurgens Motor Car Company, Fremont, Ohio, will enlarge its plant by the erection of an addition 60 x 150 ft. to be used in the assembling and body building departments. Another addition is contemplated in the spring.

Bids have been received by The Toledo Factories Company, Toledo, Ohio, for an industrial power building which that company will erect in Toledo.

Cincinnati

CINCINNATI, OHIO, December 26, 1911.

The holiday season has caused a natural cessation in the buying of machine tools, although there are a few export orders that will probably be closed soon. Nearly all manufacturers in this section are taking stock and making arrangements for going out after business soon after the first of the new year.

There is a report in circulation, that cannot be confirmed at this writing, to the effect that one of the large Central Western railroad systems contemplates placing orders for machine tools on a list that was issued over a year ago.

The jobbing foundries are not quite so active, and most of them welcome the chance to close down for a few days.

The Miami Valley Machine Tool Company, Dayton, Ohio, has been consolidated with the Stiles Mfg. Company, Parkersburg, W. Va., and at an early date will commence the removal of its Dayton plant to Parkersburg. The new company is incorporated under the name of the Miami Machine Company, with $200,000 capital stock. In addition to its regular line of engine lathes, drill presses and grinders, woodworking machinery will also be manufactured, as well as a full line of shaft hangers, couplings, etc. The officers of the company are P. P. H. Conover, president; James Turpin, vice-president, and Guy L. Camden, secretary and treasurer.

Architects Garber & Woodward, Andrews Building, Cincinnati, will probably be ready to receive bids the latter part of January for the construction of the proposed 27-story office building for the Union Central Life Insurance Company.

The Shartle Brothers Machine Company, Middletown, Ohio, was recently incorporated with $100,000 capital stock to take over the business of an unincorporated firm of the same name. No additions are planned to the existing plant, as has been currently reported.

The M. Marcus Building Company, Cincinnati, has been awarded contract for a six-story brick addition to the cracker factory of George A. Streitman & Sons, Canal and Twelfth streets.

For the announced purpose of manufacturing and dealing in iron and steel, the Superior Tool Company has been incorporated at Wheeling, W. Va., with $50,000 capital stock. Ed. W. Westwood and H. E. Rennard are named among the incorporators.

The Concrete Steel Company, Cincinnati, has commenced work on a three-story concrete dry house for the Clifton Springs Distilling Company.

The Richland Macadam Company, Waldo, Ohio, has recently been incorporated to operate a stone quarry, and it is quite probable some crushing machinery will be required. Thomas Carroll is one of the incorporators.

C. L. McCrea, Dayton, Ohio, is president of the recently organized American Briquetting Company, an Arizona corporation with $1,250,000 capital stock. It is the announced intention of the new company to erect a fuel briquetting plant at New Salem, N. D.

The Allyn Engineering Company, Oakley-Cincinnati, Ohio, has been appointed consulting engineer for the Milwaukee Corrugating Company, Milwaukee, Wis., and is now preparing plans for additions to the Company's Milwaukee plant that will represent an expenditure of over $500,000.

Detroit

DETROIT, MICH., December 26, 1911.

The holiday season is having its effect on the machine tool market and business the past week has been of a very ordinary nature. Inventory taking and the fact that many of the larger manufacturing concerns hold their annual meetings the first and second weeks of January also tend to hold back the purchase of equipment in large quantities. Inquiries are very encouraging and are from widely diversified sources, indicating healthy industrial conditions in almost all lines. A feature of the situation locally is the large number of new companies which are entering the field, especially for second hand machinery, mostly for small machine shop equipment and for replacements. A number of propositions calling for a considerable tonnage of structural material are pending and are expected to mature early in the year. Building conditions continue to improve.

Knell & Adams, automobile body finishers, have purchased the plant of the Stoepel Overall Company, 1045 Jefferson avenue, and will equip it for their own use. The new factory is two stories, 77 x 200 ft., and will permit a considerable expansion of the company's business.

The Nichwalds Company has been incorporated with a capital stock of $10,000 to manufacture automobile parts and accessories. The incorporators are H. W. and T. A. Nichwalds and Harry M. Lau.

The Studebaker Corporation, manufacturer of automobiles, has taken out a permit for the erection of an addition to cost $13,000 to its No. 3 plant and is constructing an addition to its No. 1 plant costing $3,000.

The Detroit Switch Lock Company has been incorporated with a capital stock of $25,000 to manufacture and deal in railroad safety appliances. The principal stockholders are Albert Kaltschmidt, M. W. Edgar and J. R. Decker.

Adam Brandau, maker of fireproof molders' shoes, has merged his business in a stock company with a capital stock of $40,000 under the style of the Brandau Shoe Company and will enlarge his operations.

The American Car & Foundry Company has purchased the Baugh steam forge plant on Clark street, which has been idle for three years, and will utilize it for the manufacture of iron parts for cars.

Frederick Kahl, manufacturer of machinery castings and structural iron, has incorporated his business under the style of the Frederick Kahl Iron Company with a capital stock of $100,000. It is probable that the capacity of the present plant will be materially increased in the near future.

The plant of the Universal Motor Truck Company has been purchased by interests headed by Howard Walton, of New York City. The company has a present capital stock of $350,000, and according to V. K. McBride, general manager of the company, plans are under way for a reorganization of the company looking toward increased capital and an enlargement of the plant.

The Lansing Abattoir Company, Lansing, Mich., has been organized with a capital stock of $30,000 by G. H. Zeigler, J. G. Reutter and G. E. Decke. The company will erect a modernly equipped packing plant.

The Witwer Baking Company and the Freeman Baking Company, Kalamazoo, Mich., have completed a merger of their interests whereby the plants of the two companies will be combined and a further addition to the capacity of the merger is contemplated, including the erection of two new buildings and the purchase of additional machinery. George Freeman will be general manager of the consolidated company.

The Commonwealth Power Company, Jackson, Mich., has completed plans for the erection of a large power plant at Battle Creek, Mich., to be used as a terminal for its high tension lines from the Au Sable River. The plant and equipment will involve the expenditure of $250,000.

The Kalamazoo Stove Company, Kalamazoo, Mich., is adding a department for the manufatcure of furnaces and is increasing its equipment heavily.

C. A. Spears & Son, Grand Rapids, Mich., are planning to build a large factory in connection with their lumber yards, for the working up of building materials. The factory will be of brick and concrete and will be modernly equipped.

The plant of the Adjustable Table Company, Grand Rapids, Mich., was destroyed by fire, December 16, causing a loss of $65,000. G. A. Hendricks, president of the company, states that work on rebuilding the plant will be commenced at once. A five-story building, with modern woodworking equipment and a complete sprinkler system, is planned.

H. E. Oliver, Detroit, is interested in the establishment of an artificial ice plant at Owosso, Mich. A building 60 x 100 ft. is planned.

The Wolfarth Baking Company, Saginaw, Mich., will build a new baking plant 85 x 98 ft. An entirely new equipment of baking machinery will be installed.

H. N. King, Adrian, Mich., will soon begin the manufacture of a new silo building block of cement for which he recently secured a patent.

The Art Mfg. & Novelty Company, manufacturer of picture frames, is removing its business from Detroit to Pigeon, Mich. A factory building has been secured and the output of the company will be considerably increased.

The Mershon & Morley Company, Saginaw, Mich., maker of portable houses, has increased its capital stock from $25,000 to $35,000 to take care of increasing business.

The Brown Machine & Engine Company, Lansing, Mich., has been organized with $25,000 capital stock to take over the tool works of H. W. Brown, who will be president of the new company. The concern has perfected a stationary gasoline engine of new design and a department for its manufacture will be equipped.

The electric lighting plant at Sparta, Mich., was destroyed by fire December 20, entailing a loss estimated at $50,000. The plant was owned by the Sparta Milling Company and it is reported that steps to rebuild will be taken at once.

The Hastings Table Company, Hastings, Mich., is erecting an addition which will add 6000 sq. ft. to its plant.

The Noyes & Frank Nut Company has been incorporated with $10,000 capital stock to manufacture nuts and burs. The stockholders include Mayhew E. Noyes, George P. and William F. Frank.

The Federal Equipment Company has been incorporated with a capital stock of $25,000 to manufacture sprinkler equipment and fire extinguishers. The principal stockholders are Milton A. McRae, J. L. Hudson and J. W. Ailes.

The Schleider Mfg. Company has filed articles of incorporation giving its capital stock as $10,000. The incorporators of the new company, which will manufacture valves and engine and auto parts, are Augustus E. Schleider, W. E. Carpenter and C. E. Sweet.

William Heap & Sons, Grand Haven, Mich., manufacturers of plumbers' woodwork, have had plans prepared for an addition to their factory, 60 x 140 ft., at an estimated cost of $8,000. The addition is to give room for expansion and is not to be used for the manufacture of fireless cookers, as was erroneously stated in our issue of December 7.

William Heap & Co., Muskegon, Mich., manufacturers of fireless cookers, are erecting a factory building at Grand Haven, Mich., and will move their business there as soon as it is completed.

The South

LOUISVILLE, KY., December 26, 1911.

The general feeling is optimistic, and it is believed that 1912 will produce a normal volume of business, at least. There has been some stimulation of the demand for machine tools in the local market. Building operations are continuing to absorb a large amount of equipment. The expansion of coal development work in eastern Kentucky is going ahead, and a lot of orders for machinery of all kinds are being placed, especially in the southeastern part of the State in the so-called Jellico district.

The Tycrete-Concrete Company, Louisville, will purchase a 12-ton hydraulic press for use in making concrete blocks.

The Sunnybrook Distilling Company, Louisville, is erecting a new building, and is contracting for a good deal of new equipment, including conveying machinery, etc.

E. D. Morton & Co., Louisville, report the sale of three Howe beam scales ranging in size from 2½ to 5 tons to the Greenbrier Distilling Company; an 11-in. lathe of the South Bend Machine Tool Company to the Henry Koehler Mfg. Company, Louisville, and a Burnham boiler-feed pump to the Louisville Soap Company.

W. H. Neill & Co., Louisville, report a heavier demand for machine tools. During the past week an upright drill press of the Rockford Drill Company and a Foster turret lathe were included in the sales.

The Norman Lumber Company, Louisville, has purchased a Hanchett-Swage grinding outfit for use in connection with its recently erected planing mill.

The Henry Vogt Machine Company, Louisville, reports the completion of its new buildings, which will double the capacity of its ice machine department, and the installation of a 10-ton electric crane by the Pawling & Harnischfeger Company, Milwaukee. Night work is the rule at this plant, which has received a lot of inquiries for boilers, refrigerating plants, ice machinery, etc.

Fred Franke, Louisville, has moved his wood-working plant to Jeffersonville, Ind., and has installed equipment for the manufacture of lawn swings and other wood specialties.

The Maysville, Ky., Public Service Company has let a contract to the General Electric Company for the installation of a 200-kw. generator.

George A. Dickel & Co., Nashville, Tenn., have purchased a site at Hopkinsville, Ky., and will erect a large distillery there, it is reported. The company has been operating a plant near Nashville.

K. U. Meguire, of the Sneat-Meguire Coal Company, Louisville, has been elected president of the Harlan Coal Company, with headquarters at Barbourville, Ky., which will develop 10,000 acres of coal lands near Caston, Ky. L. W. Farmer, Barbourville, is manager of the company, and will shortly begin letting contracts for the necessary equipment, including conveyors, engines, boilers, compressors, etc.

The Audubon Mineral Water Company, Maysville, Ky., is erecting a bottling plant, and is in the market for equipment, including power machinery. A boiler, engine and pump are wanted.

Development work is to be begun in the immediate future by the Pond Creek Coal Company, 55 Congress street, Boston, Mass., which controls 30,000 acres of coal lands in Pike County, Ky. It is reported that machinery will be purchased immediately. Thomas B. Davis, Jr., 1 Broadway, New York, is general manager of the company.

Machinery men are interested in the organization of the Kentucky Fuel Company, which has taken over 12 mines in western Kentucky. The company is to be capitalized at $1,500,000, and will be stronger financially than any concern which has had charge of the development of mining properties in that section. It is understood that considerable expansion will be provided for by the new company, of which W. G. Duncan, Greenville, Ky., is president.

The Kentucky State Reform School, Lexington, Ky., is equipping a manual training department. A machine shop, forging department and wood-working shop are among those to be provided for.

The Farmers' Loose Leaf Tobacco Warehouse Company, Carlisle, Ky., will equip its building with a hydraulic press of large capacity for the purpose of prizing leaf tobacco.

Benton, Ky., is considering the establishment of a system of water-works.

A chair factory costing $25,000 is to be erected at Loudon, Tenn. Those interested are C. H. Bacon, C. P. Taliaferro, J. H. Carmichael and others.

The Tennessee Auto Company, Nashville, Tenn., will erect a repair shop costing $3,000 on Grundy street. The company will require a fair complement of machine tools.

The plant of G. N. Mize & Son, manufacturers of mantels and school desks, Maryville, Tenn., was destroyed by fire December 16. It will be rebuilt at once.

The Nashville-Gallatin Interurban Railway, Stahlman Building, Nashville, Tenn., is in the market for a second-hand three-ton steam hoist on trucks.

The Great Falls Power Company, Nashville, Tenn., is making surveys at Great Falls of the Caney Fork River with reference to plans for a power plant. F. H. Yost is general manager.

The Nashville Railway & Light Company, Nashville, Tenn., has begun the erection of an emergency power station on Fourth avenue, North. The estimated cost of the station is $7,000.

The Cleveland Foundry & Machine Works, Cleveland, Tenn., has been incorporated with $20,000 capital stock by C. A. Horner, D. D. Triplett, J. C. Ramsey and G. T. Denton.

Announcement is made that the plant of the Tennessee Cotton Oil Mills Company, Trenton, Tenn., which was recently burned, will be rebuilt and enlarged. John Meyers is vice-president of the company.

H. B. Wood, Empire Building, Birmingham, Ala., is reported to be planning the erection of an automobile factory.

Contracts are being let by the United States Cast Iron Pipe & Foundry Company for the erection of additional buildings at its works in Birmingham, Ala. The Riter-Conley Mfg. Company, Pittsburgh, has been given the contract for 1500 tons of material.

The Atlantic Coast Line is planning the erection of car repair shops and other buildings at Thomasville, Ga. A round-house, shop building, etc., will be erected.

The Tifton Ice & Power Company, Tifton, Ga., is asking for prices on a 150-hp. boiler.

Macon, Ga., is now considering an engineer's report recommending the installation of electrical machinery, the erection of a power house and the construction of other improvements in connection with the municipal water system.

The Motor Vehicle Company, Savannah, Ga., has been incorporated with $200,000 capital stock for the purpose of manufacturing automobiles. Sigo Meyers, Seymour Stewart and others are interested.

Douglas, Ga., is to build an electric light plant and water-works system. A bond issue of $15,000 has been authorized.

The J. J. Newman Lumber Company, Hattiesburg, Miss., has begun work on the erection of a $150,000 sawmill at Sumrall, Miss. The Milwaukee Bridge Company will erect the steel portion of the building, and the Filer & Stowell Company, Milwaukee, Wis., has been given the contract for the machinery.

Charlotte, N. C., will receive bids until January 16 on its new water-works system. Motor-driven turbine pumps, a pumping station, etc., will be required.

Additional engines are to be installed in the power-house of the city electric light plant at Donaldson, La. The estimated cost of the improvements is $25,000.

A power-house and 27-stall round-house are to be erected at Spencer, N. C., by the Southern Railway. B. Herman, Washington, D. C., is chief engineer.

The city commissioners of Montgomery, Ala., will expend $16,500 on the installation of an electric compressor at the water-works plant. Other improvements are contemplated.

The Virginia Railway & Power Company is reported to be planning the erection of an addition to its power plant.

The Roanoke Box Mfg. Company, Weldon, N. C., has been incorporated with $50,000 capital stock to manufacture box shooks. The company is having plans prepared for a plant with a daily capacity of 60,000 ft. The incorporators are G. L. Vincent, W. L. Deal and R. W. Johnston.

The Cordele Ice Company, Cordele, Ga., has had plans prepared for the erection of an additional building for the purpose of installing new machinery to increase its ice capacity to 50 tons a day. The improvements when completed will cost $20,000. H. L. Mize is manager.

Indianapolis

INDIANAPOLIS, IND., December 26, 1911.

The Citizens Gas Company, Indianapolis, will construct additional by-product coke ovens and add other new equipment in order to take care of its growing business. J. D. Forrest is general manager.

The Noblesville Heat, Light & Power Company, Noblesville, Ind., has increased its capital stock from $70,000 to $100,000.

The Summit City Supply Company, Ft. Wayne, Ind., has been incorporated with $25,000 capital stock, to deal in building supplies. The directors are J. R. Kennedy, Henry Wehrenberg, William Westhoff, James Hartzell and Henry Hachmeier.

The Burk Construction Company has been incorporated at Newcastle, Ind., with $10,000 capital stock, to do a road construction business. The directors are J. M. Burk and Howard F. Thomas.

The capital stock of the Advance Stove Works, Evansville, Ind., has been increased from $100,000 to $200,000.

The Elkhart Iron Works, Elkhart, Ind., has been incorporated with $36,000 capital stock, to operate a foundry and do a manufacturing business. The directors are W. H. Holland, E. J. Burnett and C. S. Workinger.

The Indiana Coal & Clay Company has been organized at Greencastle, Ind., with $50,000 capital stock, to do a coal mining business in Owen County. The president is Dr. G. W. Bence and the secretary George Hanns.

At an election at Coatesville, Ind., the vote was in favor of building a municipal electric light system.

The De Tamble Motors Company, Anderson, Ind., is enlarging its plant so as to have a capacity of 10 automobiles a day.

The Brown Brass Mfg. Company, Napanee, Ind., has increased its capital stock from $10,000 to $20,000.

St. Louis

ST. LOUIS, MO., December 26, 1911.

The machine tool market during the week has been unquestionably affected by the holiday period, but the slacking up in actual transactions has none of the earmarks of the dullness of recent months. The inquiries coming in show just as strong tendencies as have existed in the past few weeks, and dealers are very optimistic regarding the prospects following the first of the year after inventories have been taken and everything has been squared away for the new year. The second-hand machinery business is rather quiet, but a considerable amount is moving in the aggregate.

Incorporation papers have been taken out effecting the consolidation of the W. R. Colcord Machinery Company and J. W. Wright & Co., both having completed this week removal to new locations adjoining each other at Nos. 1223 to 1229 North Broadway. The name of the consolidated concern is the Colcord-Wright Machinery & Supply Company, and the incorporators are Walter R. Colcord, president; J. W. Wright, vice-president; Albert Scheu, treasurer, and Julius H. Bentzen, secretary. All the salesmen of both houses will be retained and others added. A branch under the management of W. A. Dailey will be opened in Kansas City, Mo. The new company has a capital stock of $100,000.

Bash & Gray, Joplin, Mo., have been awarded the contract for the complete equipment of the new water and sewer systems and plants accompanying at Las Cruces, N. M. Their bid was $55,753.93 and was $23,589.53 below the highest bid made.

The Moon Motor Car Company, St. Louis, has begun the construction of another story on its factory building and will equip it for almost doubling its capacity through the more effective systematization of work made possible by the new space.

The National Enameling & Stamping Company, Granite City, employing 2000 hands, which had intended to shut down January 1, will continue on full time to meet demands.

The Calhoun Clay Mfg. Company, with $300,000 capital stock, has been organized by W. G. Thomas, Charles E. McEwing, A. T. Givesbeck and W. H. Allen to equip a large plant at Golden Eagle, Ill., for the manufacture of clay products. The main offices will be in St. Louis, in the Fullerton Building.

The abandoned property of the Consumers Brewery of St. Louis, absorbed in a merger, has been sold to Henry Griesedieck, Jr., who will remodel and modernize the mechanical equipment.

The Consolidated Saw Mills Company, St. Louis, has been incorporated with $250,000 capital stock by John C. Crawford, Homer B. Crawford and Charles McDaris, to handle sawmills heretofore operated by a corporation of similar name under Oklahoma laws, and also to extend their milling plants.

The Big Western Mining Company, Joplin, Mo., with $50,000 capital stock, has been incorporated by W. E. West, B. T. Becker and B. F. Dye to install equipment and operate mining property owned by them.

The Daleville Canning Company, Daleville, Ind, has been incorporated with $50,000 capital stock by J. G. Sutton, F. M Boyer and B. E. McDowell to equip a large canning plant.

The Cutalite Machinery Company, with $15,000 capital stock, has been incorporated in St. Louis by M. J. McEneny, W. A. McEneny and William Grafeman, to manufacture machinery.

The East St. Louis Cotton Oil Company, of East St. Louis, Ill., with a capital stock of $250,000, has been authorized to employ its capital in a branch oil plant in St. Louis, Mo.

The Edwards & Wharton Lumber Company, with $10,000 capital stock, has been incorporated at Aledo, Ill., by H. W. Edwards, W. A. Wharton and J. I. Edwards to install a sawmill and planing mill equipment.

The Consumers Pure Ice & Fuel Company has been incorporated with $20,000 capital stock at Rockford, Ill., by G. and M. Ruh and J. G. Siewenie, to equip an ice-manufacturing plant.

The R. L. Hight Mfg. Company, with $20,000 capital stock, has been incorporated at Decatur, Ill, by R. L. Hight, Roy R. Wilson and A. B. Holabird

The Brown McDonald Machinery Company, with $10,000 capital stock, has been incorporated in St. Louis by Charles L. McDonald, Isaac N. Brown and Herman S. Albrecht to manufacture and deal in machinery and supplies.

The Woodson Coal Company, Huntington, Ark., with $24,000 capital stock, has been incorporated by W. M. Pye, G. R. Holbrook, S. Woodson and C. C. Woodson to install mining equipment and open a coal mine.

The Rex Buggy Company, Connorsville, Ind., has increased its capital stock from $100,000 to $150,000 for the purpose of increasing its manufacturing capacity.

The Winter-Langeneckert Folding Box Company, St. Louis, has purchased adjoining real estate to provide for the erection of a one-story addition to its factory at a cost of $15,000.

The Hill Mining Company, Duenweg, Mo., with $28,000 capital stock, has been organized by Isaac Hill, J. Tullington and Frank H. Brown to install mining machinery on land owned by them.

The City Council of Belleville, Ill., is considering means for taking water from the Mississippi for its supply, and is planning to take up the matter of install-

ing a plant to pump and distribute the water so drawn from the river.

The Queen City Electric Company, Sedalia, Mo., has been awarded the contract for installing an electric light system at Lincoln, Mo.

The Argenta Boiler & Iron Works, Little Rock, Ark., has completed the installation of machinery in its new shops, and is about to begin operations. The enterprise is being conducted by J. G. Garden and J. J. Koscielny.

The Union Machine Company, Bartlesville, Okla., will enlarge its foundry in connection with the taking over of a new line of manufacture recently acquired.

The R. M. Fletcher Stave Company, Pine Bluff, Ark., has been incorporated with $15,500 capital stock to manufacture staves, etc. The company has an established plant and is not in need of equipment at this time. The incorporators are R. M. Fletcher, O. Z. Chockley and D. W. Hudspeth.

Texas

AUSTIN, TEXAS, December 23, 1911.

Briefly, it may be stated that the year 1911 has been a very good one for the machinery trade of Texas and the Southwest generally. There has been a noticeable increase in the demand for certain lines of machinery, particularly for irrigating pumping plants and many kinds that enter into manufacturing establishments. For the various smaller articles of machinery there has also been a satisfactory demand. The structural steel business in Texas has increased enormously, due to the erection of the modern type of buildings and for other purposes. Prospects for the coming year are very promising. Splendid rains over the state during the last week or ten days have placed a good season in the ground and created an optimistic feeling on the part of the business element. With the subsiding of political troubles in Mexico it is certain that American machinery manufacturers will find a very large demand for their products in that country.

J. C. Lankford and B. Martin, Terrell, who recently leased the Central Iron Works plant at Temple, will install new machinery and make enlargements.

The Chamber of Commerce of Wichita Falls is organizing an industrial promotion corporation with a capital stock of $80,000. It will have for its purpose the furnishing of free sites for factories and creating a fund to encourage the establishment there of various kinds of industries.

C. W. Post, Battle Creek, Mich., announces that he will erect at Post City, Texas, a textile mill of 10,000 spindles. The initial cost of the factory will be about $400,000, and it will be erected in such a manner as to permit additions of machinery. H. W. Fairbanks, of Dallas, will be superintendent of construction and be in charge of the operation of the mill.

The City Council of Electra will install a waterworks system there and when this work is completed a sewer system will be constructed.

The City Water Commission of Waco has under consideration the installation of a large filtration plant. The commission has employed an expert to furnish plans for the contemplated improvement.

The Commercial Club of Temple is promoting the establishment of a hat factory at that place.

The Sinton Ice & Light Company has been organized at Sinton with a capital stock of $10,000. It will install an ice and electric light plant.

The Commercial Club of Cisco is promoting the development of a natural gas field near there and the laying of a pipe line and distributing system for supplying that town with fuel.

The Pineland Naval Stores Company has been formed at Remlig with a capital stock of $40,000 for the purpose of installing a turpentine and rosin manufacturing plant.

James Stoops, of Dayton, Ohio, contemplates installing a canning factory at Roswell, N. M., at a cost of about $75,000. It will be devoted to canning corn, tomatoes, beets, beans and other products.

The Hydraulic Properties Company, of New York, which has the contract for the reconstruction of the dam across the Colorado River at Austin and is installing a hydroelectric plant, has begun the work of erecting the building for the power house and will soon begin work upon the dam. The city has extended its electric power transmission system to the dam site to provide power for the construction work.

The State Prison Commission has decided to reerect the furniture factory, machine shop, blacksmith shop and repair shop at the state penitentiary at Huntsville, which were recently destroyed by fire. The loss to the state by their destruction was about $150,000. Governor O. B. Colquitt is acting with the prison commissioners in the matter.

The Manhattan Construction Company, Chandler, Okla., has been granted a permit to do business in Texas, with principal offices at Kingsville. It has a capital stock of $50,000.

The Mogollon Power & Mining Company has been formed at Silver City, N. M., with a capital stock of $250,000. Its incorporators are Thomas J. Curran, of Cooney, N. M.; R. P. Barnes and C. C. Royall, of Silver City, N. M.

The Mexico Oil & Refining Company has been formed with headquarters at Gallup, N. M. Its capital stock is $1,000,000. The incorporators are E. R. Vaughan, of Grants, N. M.; W. R. Fleming, of Grants; R. H. Hanna, E. E. Meier, H. F. Stephens and J. H. Vaughan, of Santa Fé, N. M.

E. B. Chapin, of San Antonio, and associates, who are arranging to construct a dam across Devil's River north of Del Rio, Texas, and build a large irrigation system with a view of reclaiming about 125,000 acres of land, have let the contract for the preliminary surveys of the proposed works to C. S. Young Company, San Antonio. In connection with this irrigation system a large hydroelectric plant will be installed.

The Chapala Hydroelectric & Irrigation Company, of Guadalajara, Mexico, has finished the installation of its new hydroelectric plant at Fuente Grande, on the Santiago River, fifteen miles from the former city, at a cost of $1,600,000 gold. The plant has a capacity of 12,000 hp., a large part of which will be transmitted to the Etezatlan and Hostotipaquillo districts in the State of Jalisco. It will also supply power for operating a number of irrigating pumping plants and other industries within a radius of 100 miles.

The Pacific Coast

SAN FRANCISCO, CAL., December 19, 1911.

While transactions of some importance are pending in certain lines, little business is likely to be closed until after the holidays. The machine tool market is especially dull, no new inquiries having come out, while orders recently received are mainly for the class of tools used in small automobile repair shops, etc. Some of the larger shops have been figuring on new equipment, but only in a tentative way, and it is impossible to say when their orders will be placed, though a little business is expected from the gas engine manufacturers early in the coming year.

While considerable general construction work has been in progress throughout the State, contractors' equipment is moving slowly, as the larger concerns are well supplied and the amount of second-hand machinery on the market is increasing. There is more than enough machinery on the ground to take care of all local building operations at present. Preliminary work is being started on several large dams for hydroelectric power development, and some new equipment will probably be required in this connection during the coming year. The extensive road improvements planned by the State are also expected to result in considerable new business. There is a fair demand for mining machinery in Nevada, but the California mining interests are buying very little at present. Pumping equipment of all kinds is in demand, though individual sales are small.

The Oliver Filter Company and the Doak Gas Engine Company are moving their offices from the Sheldon Building to the Hooker & Lent Building at Market and First streets. The Oliver Filter Company has a lot of business in prospect from Mexican mining interests, and has appointed W. W. Merriam as manager of its business in Mexico.

The Bakersfield Water Company, Bakersfield, Cal., is installing two large two-stage turbine pumps with electric motor drive. Auxiliary gasoline engines will also be installed.

The town of Oakdale, Cal., has placed a contract with W. T. Garratt & Co., this city, for all machinery for the municipal water-works.

The city of San José, Cal., is in the market for a rock crusher.

The Corliss Gas Engine Company, Petaluma, Cal., has let a contract for a new building at its shop, and is expected to place orders for some new tools in the near future.

A meeting of stockholders of Payne's Bolt Works, 133 Howard street, this city, will be held January 30

for the purpose of reducing the capital stock from $300,000 to $75,000.

It is reported that a five-stamp mill will be installed shortly at the Midas mine near Grass Valley, Cal.

The Hanford Water Company, Hanford, Cal., is preparing to replace its present pumping plant with one of larger capacity.

Cretsinger Bros. are preparing to install a marine engineering and machine shop on the waterfront of Los Angeles Harbor.

The Oro Electric Corporation proposes to start work on its new hydroelectric plant near Belden, Cal., next April, the work to be completed in about two years. The plant is to have a capacity of 50,000 hp.

The Tucson Iron Works, Tucson, Ariz., has taken a contract for all castings and iron work for a smelter to be erected by the American Smelting & Refining Company.

The completion of the Owens River Aqueduct by the city of Los Angeles will probably bring a large amount of second-hand machinery on the market. The tunnel work on this project is now practically complete, the total amount of tunnels being 42.85 miles.

The Reliance Gas Regulator & Machine Company, Pasadena, Cal., has been incorporated with $100,000 capital stock. The company has just completed a new plant for the manufacture of gas regulators, gas clamps and other gas machinery.

M. H. Bliven, formerly with the American Pipe & Construction Company, Philadelphia, Pa., and R. W. Haight, formerly with the San Diego Hardware Company, San Diego, Cal., have formed a partnership to engage in the general machinery and supply business at San Diego.

Western Canada

WINNIPEG, MAN., December 21, 1911.

This month has been very mild following the cold start the season made in November and there is still considerable work being done in the building line. Some are being finished earlier than expected and others will be well advanced for finishing in the spring. The mild weather has been very favorable for traffic, but there are still complaints of inadequate rolling stock. The unsatisfactory conditions on the railroads this fall is being brought before the government by the business communities, and it is imperative that great improvements be put into effect before another fall season.

The Canadian Dominion Investment Company has bought a site in Winnipeg on which a large modern office building will be erected in the near future.

The Winnipeg Board of Works has indorsed a scheme to add five new wells to the waterworks system.

Tenders will be called on or about January 1 for passenger elevators, lighting, heating, vacuum cleaning appliances, sprinkler system, plumbing, etc., for the Fort Garry Hotel, Winnipeg. Herbert B. Pugh, 927 Union Bank Building, is the architect.

The rural municipality of Assiniboia will build six water tanks of 30,000 gal. each. Frank Ness, Kirkfield Park P. O., Manitoba, is secretary of the municipality.

G. M. Gibbs is head of a Vancouver syndicate that will erect a plant in that city for the manufacture of steel bars.

The Alberta Clay Products Company, Medicine Hat, Alberta, will extend its plant at a cost of $175,000.

The Canadian Pacific Steel Company is contemplating the building of a plant at Vancouver, B. C., to manufacture tin plate.

The new water works and power plant to be installed at Prince Rupert, B. C., will cost $550,000. The ratepayers have already approved the expenditure.

A by-law has been passed at Neepawa, Man., to raise $100,000 for a waterworks system. Chapman & Power, Toronto and Winnipeg, are the engineers.

The city of Port Arthur recently signed an agreement with a firm to be known as the Steel Products Company of Port Arthur whereby the company, which now has a plant at Morrisburg, Ont., and a capital stock of $750,000, will move its plant to Port Arthur and engage in the manufacture of sheets.

The large flour mill, oatmeal mill and elevator of the Saskatchewan Flour Mills Company, Ltd., Moose Jaw, Sask., which were burnt last week, will be rebuilt without delay. The loss was about $500,000, covered by insurance.

Government Purchases

WASHINGTON, D. C., December 26, 1911.

The United States Reclamation Service, Boise, Idaho, will open bids January 10 for furnishing four electric derrick hoists with motor, drum, etc., complete and four stiff-leg derricks, including the necessary fittings.

The Paymaster General, Navy Department, Washington, will open bids January 9, under schedule 4184, class 34, for one bevel band saw; class 35, one automatic horizontal chisel mortiser for delivery to Philadelphia.

The United States Revenue Cutter Service, New York, opened bids December 14 for furnishing one water tube boiler for the revenue cutter Hudson, as follows:

Mosher Water Tube Boiler Company, New York, $4,920, $5,450, $5,270, $5,800, $5,770 and $6,300; Gas Engine & Power Company and Charles L. Seabury & Co., Morris Heights, N. Y., $5,337; Babcock & Wilcox Company, New York, $6,290; Theodore Smith & Sons Company, New York, $4,070, $4,950 and $5,170.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids December 19 as follows:

Schedule 4115, class 65, one double surfacer with six rolls—Bidder 23, Berlin Machine Works, Beloit, Wis., $1,432; 36, Chicago Machinery Exchange, Chicago, Ill., $925; 63, J. A. Fay & Egan Company, Cincinnati, Ohio, $1,064; 196, D. D. Whitney & Son, Winchendon, Mass., $1,110, $1,230 and $1,290; 207, American Woodworking Machinery Company, Rochester, N. Y., $1,100.

Class 66, one motor-driven, four-sided outside molder—Bidder 23, Berlin Machine Works, Beloit, Wis., $1,215; 36, Chicago Machinery Exchange, Chicago, Ill., $1,153; 63, J. A. Fay & Egan Company, Cincinnati, Ohio, $1,066.70 and $1,171.20; 131, Newman Machine Company, Greensboro, N. C., $1,185; 166, H. B. Smith Machine Company, Smithville, N. J., $1,222; 207, American Woodworking Machinery Company, Rochester, N. Y., $1,400; 216, Manning, Maxwell & Moore, New York, $1,165.

Schedule 4127, class 91, for two motors and two starting panels—Bidder 1, Allis-Chalmers Company, Baltimore, Md., $1,520.40; 19, Burke Electric Company, Erie, Pa., $1,656.92; 49, Diehl Mfg. Company, Elizabethport, N. J., $1,628.60; 62, Fort Wayne Electric Works, Fort Wayne, Ind.; $1,598; 65, Garwood Electric Company, Philadelphia, Pa., informal; 67, General Electric Company, Schenectady, N. Y., $1,500; 129, National Electrical Supply Company, Washington, D. C., $1,872; 197, Western Electric Company, New York, units; 199, Westinghouse Electric & Mfg. Company, Washington, D. C., $1,882.48.

Trade Publications

Metal Protecting Paint.—Harrison Brothers & Co., Inc., Twenty fifth street and Grays Ferry road, Philadelphia, Pa. Booklet. Devoted to Antoxide pain for iron and steel surfaces. The development of this paint is described with special reference to the three classes of pigments according to their action toward the formation of rust. It is pointed out that even in the light of recent investigations along this line the pigments originally selected for this paint are still used, the only change made being in the proportions of various ingredients.

Welded Pipe.—Central Tube Company, Pittsburgh, Pa. Booklet. Refers to a new line of black and galvanized pipe that is said to be soft, workable and easy to thread. Engravings showing the pipe in process of manufacture are included.

Suction Gas Producers.—Amsler Gas Power Company, Wabash Building, Pittsburgh, Pa. Pamphlet. Treats of the type C suction gas producer for power and fuel. The special features claimed for this producer are high economy, uniform quality of gas, simplicity of construction and safety. The construction of the producer is gone into in considerable detail and the text is supplemented by both half-tone and line engravings. The results of a test on one of these producers are given with a diagram showing the relation existing between the quantity of water delivered into the vaporizer and the gas produced.

Air-Steam Corliss Engine.—The Christie Engine Company, Waterloo, Iowa. Pamphlet. Contains the report of a 5-hr. economy test made on one of these engines together with a description of the Christie-air-steam Corliss engine which operates on the four stroke cycle principle of the gas engine instead of the two-stroke cycle of the steam engine. This description is somewhat extended and is supplemented by half tone engravings.

Presses.—American Can Company, 112 West Adams street, Chicago, Ill. Booklet. Refers to a line of open back inclinable presses manufactured under the Rudolphi & Krummel patents. Following a brief description of the construction of these presses, half-tone engravings are given together with brief specifications of the various sizes of presses built. A complete specification table is given on the last page.

Heating, Forging and Welding Furnaces.—Tate, Jones & Co., Inc., Pittsburgh, Pa. Catalogue. Deals with an entirely redesigned line of forging, welding and heating furnaces employing either oil or gas as fuel. The various types of furnaces include those for tool dressing, rod heating, forging and plate heating as well as a blacksmith's forge. In describing the various furnaces an illustration is given followed by a brief description and a list of the stock sizes in which it is made.

Current Metal Prices.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly report.

IRON AND STEEL—

Bar Iron from Store—

Refined iron:
1 to 1⅞ in. round and square.... ℔ 1.70¢
1½ to 4 in. x ⅜ to 1 in..... ℔ 1.70¢
1½ to 4 in. x ¼ to 5-1 ..... ℔ 1.80¢
Rods—⅝ and 11-16 round and square. ℔ 1.80¢
Angles: Cts. ℔ lb.
3 in. x ¼ in. and larger..... 1.80¢
3 in. x 3-16 in. and ⅛ in. ..... 2.20¢
1½ to 2½ in. x ⅛ in..... 1.95¢
1½ to 2½ in. x 3-16 in. and thicker.... 1.85¢
1 to 1¼ in. x 3-16 in. ..... 1.95¢
1 to 1½ x ¼ in. ..... 2.00¢
⅞ x ⅛ in. ..... 2.10¢
⅞ x ¼ in. ..... 2.15¢
⅝ in. x ¼ in. ..... 3.35¢
¼ x 3-32 in. ..... 4.40¢
Tees:
1 in. ..... 2.25¢
1¼ in. ..... 210¢
1½ to 2½ x ¼ in..... 1.90¢
1½ to 2½ x 3-16 in..... 2.00¢
3 in. and larger..... 1.85¢
Beams ..... 1.80¢
Channels, 3 in. and larger..... 1.80¢
Bands—1¼ to 6 x 6-16 to No. 8..... 2.00¢
Burden's "H. B. & S." iron, base price.... 2.95¢
"Burden's Best" iron, base price..... 3.15¢
Norway bars ..... 3.60¢

Merchant Steel from Store—

per ℔
Bessemer machinery ..... 1.70¢
Toe calk, tire and sleigh shoe..... 2.50@3.00¢
Best cast steel, base price in small lots..... 7¢

Sheets from Store—

Black

	One pass, C.R. soft steel.	R. G. cleaned.
No. 16	℔ 2.45¢	2.85¢
Nos. 18 to 20	℔ 2.50¢	2.95¢
Nos. 22 and 24	℔ 2.55¢	3.05¢
No. 26	℔ 2.70¢	3.15¢
No. 28	℔ 2.75¢	3.35¢

Russia, Planished, &c.

Genuine Russia, according to assortment ..... ℔ 12 @14¼
Patent planished, W. Dewees Wood..... ℔ A. 10¢; B. 9¢ net

Galvanized

Nos. 12 and 14..... ℔ 2.75¢
No. 24 ..... ℔ 3.10¢
No. 26 ..... ℔ 3.30¢
No. 28 ..... ℔ 3.60¢

No 20 and lighter 36 inches wide, 25¢ higher.

Genuine Iron Sheets—

Galvanized

Nos. 22 and 24..... ℔ 5.50¢
No. 26..... ℔ 6.00¢
No. 28..... ℔ 7.00¢

Corrugated Roofing—

2½ in. corrugated.	Painted.	Galvd.
No. 24..... ℔ 100 sq. ft...	$3.75	$4.70
No. 26..... ℔ 100 sq. ft...	2.85	3.90
No. 28..... ℔ 100 sq. ft...	2.50	3.65

Tin Plates—

American Charcoal Plates (per box)
"A.A.A." charcoal:
IC. 14 x 20..... $6.35
IX. 14 x 20..... 7.60
A. charcoal:
IC. 14 x 20..... $5.30
IX. 14 x 20..... 5.40

American Coke Plates—Bessemer—
IC. 14 x 20.....107 lb..... $4.20
IX. 14 x 20..... 5.20

American Terne Plates—
IC. 20 x 28 with an 8 lb. coating..... $8.10
IX. 20 x 28 with an 8 lb. coating..... 10.10

Seamless Brass Tubes—

List November 13, 1908. Base price, 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price, 18¢

Copper Tubes—

List November 13, 1908. Base price, 21¢

Brazed Brass Tubes—

List February 1, 1911. 20¼¢ ℔

High Brass Rods—

List February 1, 1911. 15⅝¢ ℔

Roll and Sheet Brass—

List February 1, 1911. 15⅝¢ ℔

Brass Wire—

List February 1, 1911. 15⅝¢ ℔

Copper Wire—

Base price, Carload lots mill 15¼¢

Copper Sheets—

Sheet copper hot rolled, 16 oz. (quantity lots) ..... ℔ 19 ¢
Sheet copper cold rolled, 1¢ ℔ lb advance over hot rolled.
Sheet copper polished 20 in. wide and under, 1¢ ℔ square foot.
Sheet copper polished over 20 in. wide, 2¢ ℔ square foot.
Planished copper, 1¢ ℔ square foot more than polished.

METALS—

Tin—

Straits pig ..... ℔ 47 @48 ¢

Copper—

Lage Ingot ..... ℔ 14¾@15¼¢
Electrolytic ..... ℔ 14¾@15 ¢
Casting ..... ℔ 14½@14¾¢

Spelter—

Western ..... ℔ 7¼@ 7¾¢

Zinc—

No. 9, base, casks... ℔ 9¢ Open... ℔ 9¼¢

Lead—

American pig ..... ℔ 5½@ 5¾¢
Bar ..... ℔ 7 @ 7¼¢

Solder—

½ & ½, guaranteed..... ℔ 26¾@27¼¢
No. 1 ..... ℔ 24½@25 ¢
Refined ..... ℔ 23 @23¾¢
Prices of solder indicated by private brand vary according to composition.

Antimony—

Cookson ..... ℔ ..@10¼¢
Hallets .....@10 ¢
Other brands .....9@ 9¼¢

Bismuth—

Per ℔ $2.00@$2.25

Aluminum—

No. 1 aluminum (guaranteed over 99% pure), in ingots for remelting (ton lots).....21¢
Rods and Wire.. .....Base price 31¢
Sheets .....Base price 33¢

Old Metals—

Dealers' Purchasing Prices Paid in New York.

Copper, heavy and crucible..... 12.25
Copper, heavy and wire..... 12.00
Copper, light and bottoms..... 11.00
Brass, heavy 8.50
Brass, light 6.50
Heavy machine composition..... 10.50
Clean brass turnings..... 8.00
Composition turnings 8.50
Lead, heavy 4.00
Lead, tea 3.75
Zinc, scrap 4.50

Nicholson Files and Rasps

Insure Shop Economy

Every time a mechanic pushes a file across his work he expends a certain amount of time and energy.

Whatever the result may be, the time and energy used on each movement is the same.

A **Nicholson** File will cut a little bit cleaner and deeper than any other file.

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